THE JOURNAL OF GAS LIGHTING
WATER SUPPLY & SANITARY IMPROVEMENT

VOL. LXXVII. No. 1985.] LONDON, MAY 28, 1901. [53RD YEAR. PRICE 6d.

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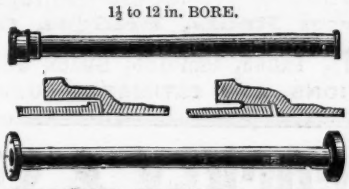

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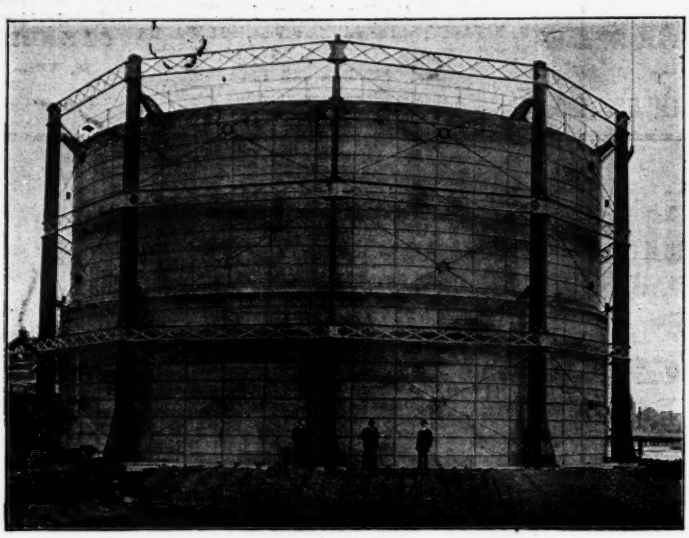

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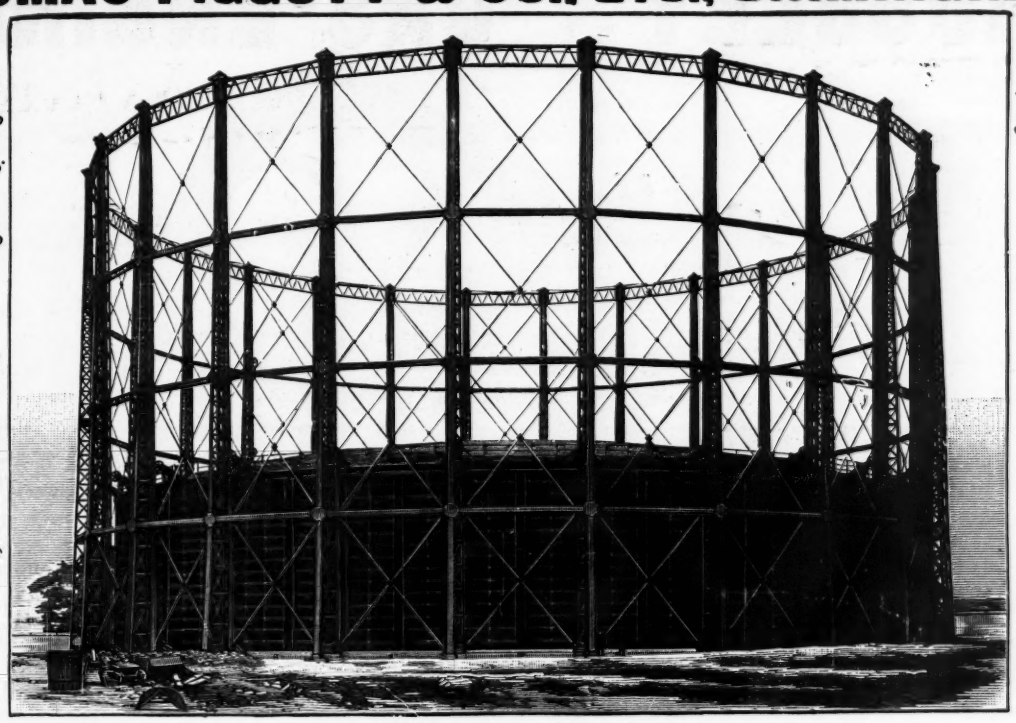

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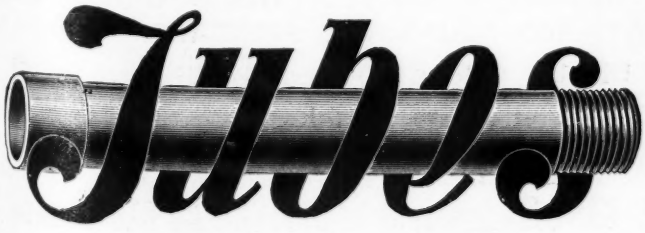

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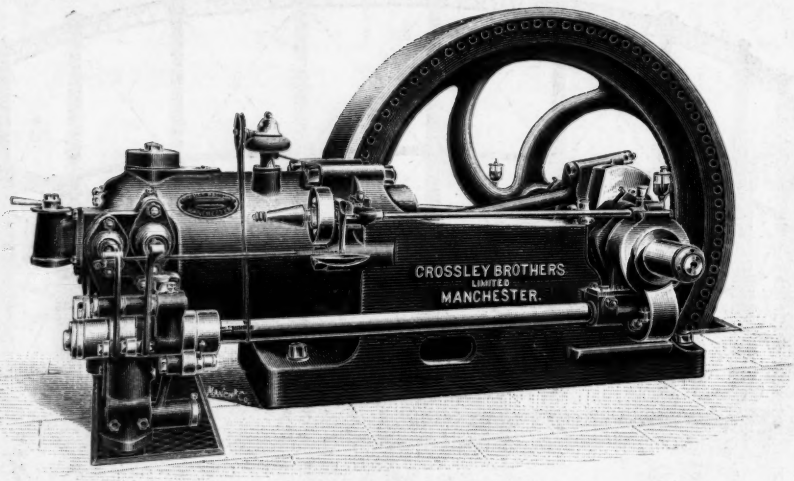

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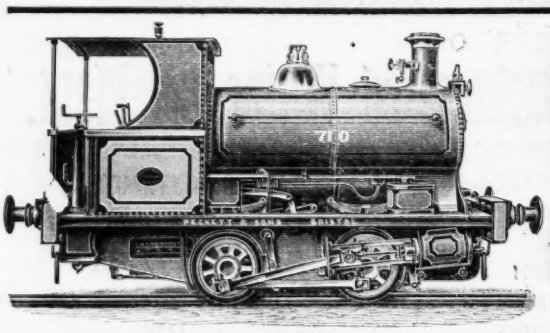

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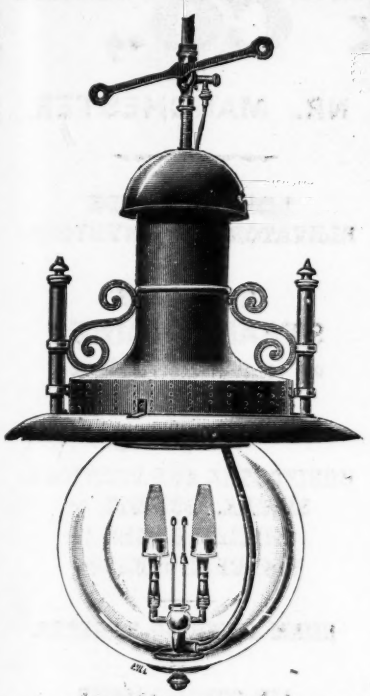

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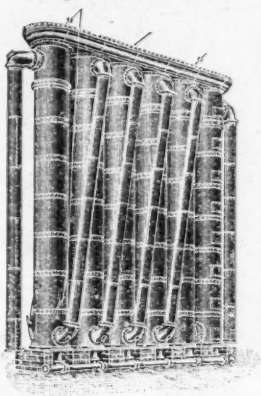

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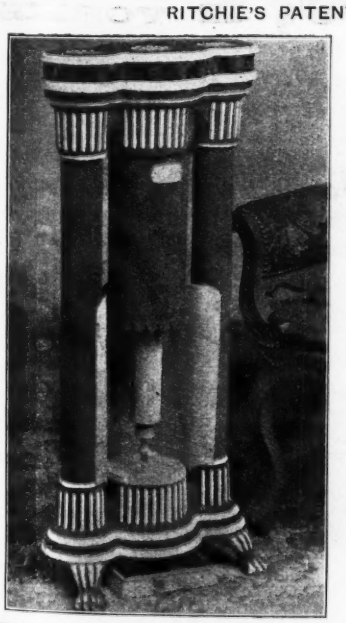

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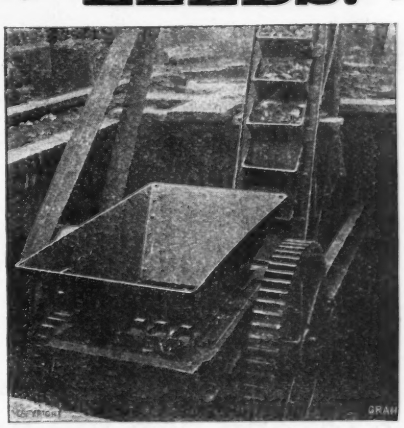

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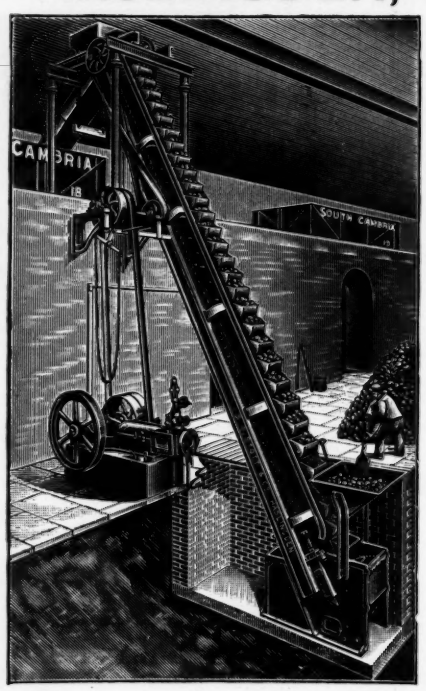

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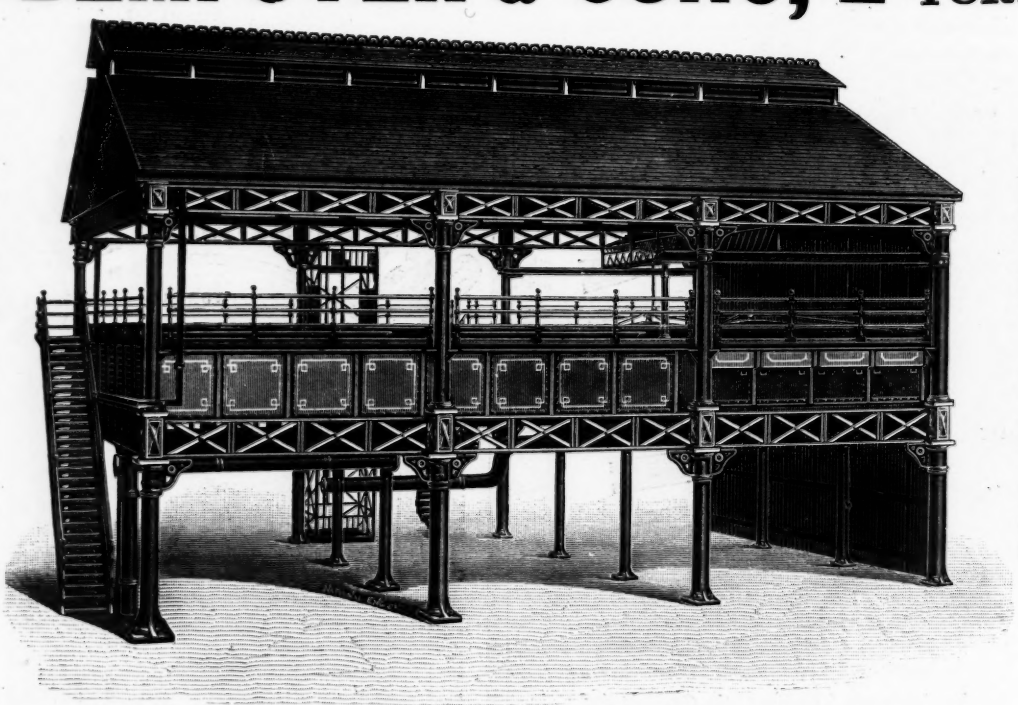

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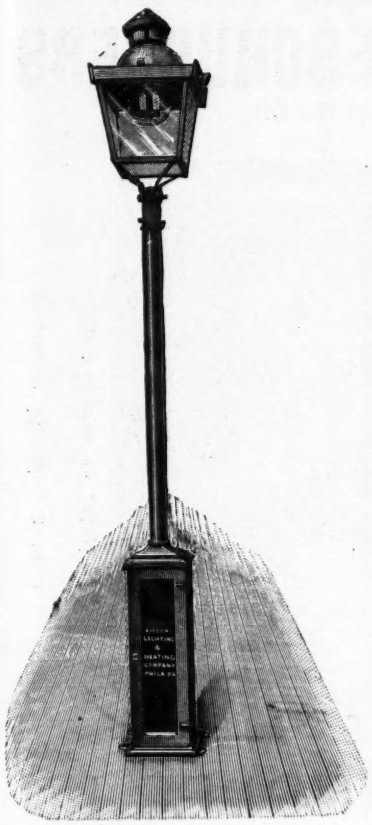

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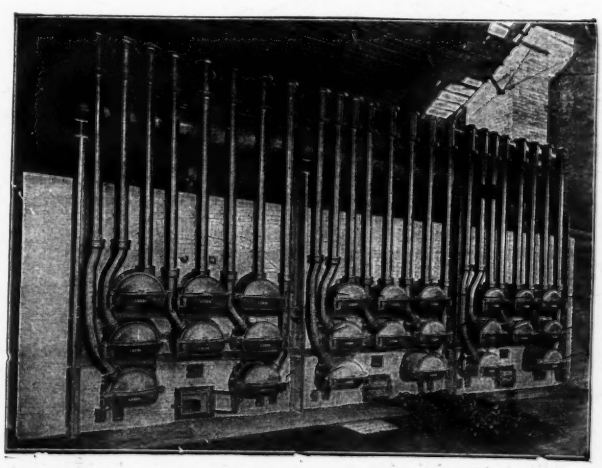

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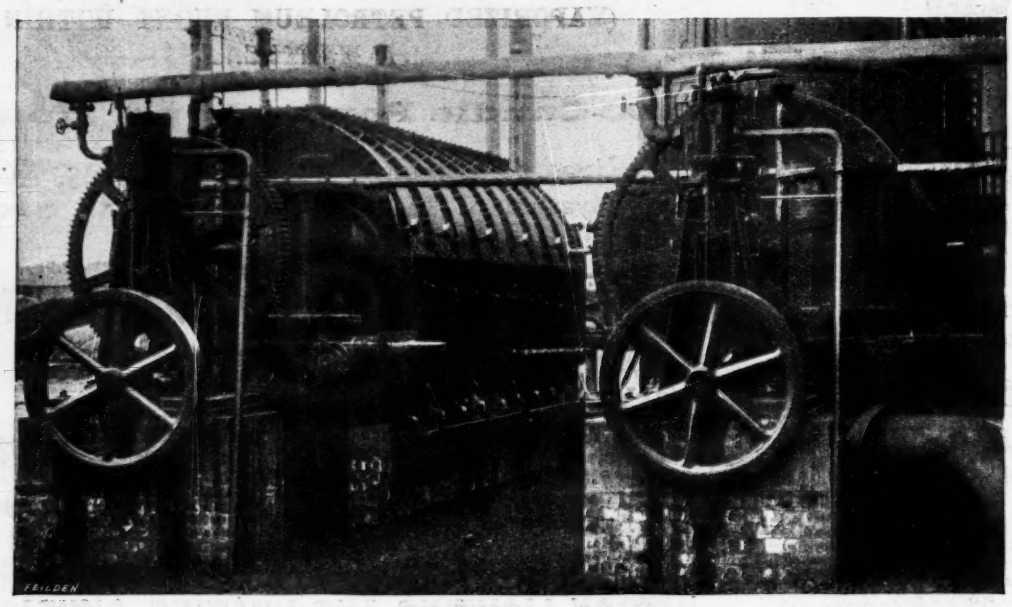

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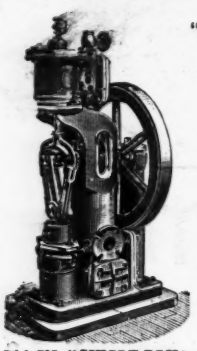

Fig. 705. "SINGLE RAM" STEAM-PUMP.

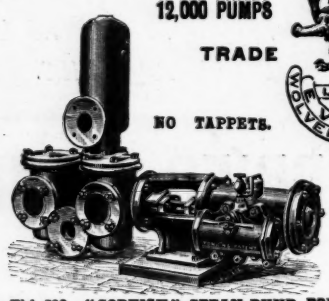

Fig. 806. "CORNISH" STEAM-PUMP FOR BOILER FEEDING, &c.

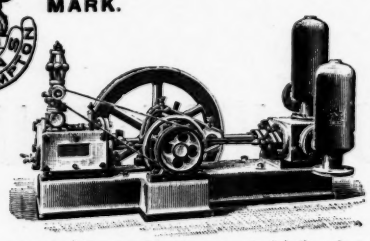

Fig. 685. "RELIABLE" STEAM-PUMP FOR TAR AND THICK FLUIDS.

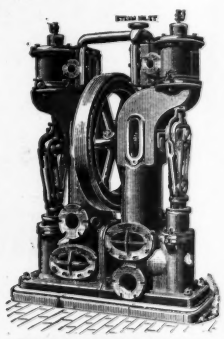

Fig. 713. "DOUBLE-RAM" STEAM-PUMP.

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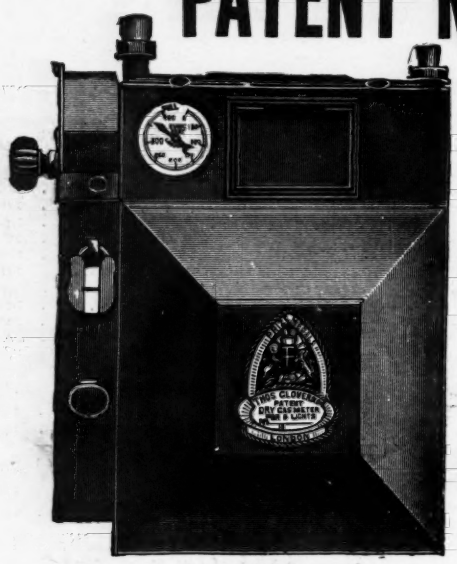

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[See also Advt. on last White Page.

JOURNAL OF GAS LIGHTING, WATER SUPPLY, &c.

VOL. LXXVII., No. 1985.—TUESDAY, MAY 28, 1901.

EDITORIAL NOTES.

The Position of the Gaslight and Coke Company.

In commenting upon the proceedings of the House of Commons Committee in regard to the South Metropolitan Gas Bill, we have refrained from offering any observations upon the position in which the passing of the Bill leaves the Gaslight and Coke Company. It is rather a curious than a profitable question, to ask what might have happened if the Gaslight and Coke Company had been advised to come to terms with the Committee and the South Metropolitan Company, as was suggested by Mr. Livesey in the course of his examination-in-chief. Some may think that the Committee would have regarded such an arrangement favourably; but nothing came of it. As matters now stand, the Gaslight and Coke Company are precisely where they were, so far as their own capital powers and prospects are concerned. They cannot stir an inch without obtaining the consent of Parliament; and the mountain of reproach that was heaped upon the unfortunate Company all through the inquiry, and especially on the last day, is significant of the reception that awaits any possible Bill of their promoting. The creation of Metropolitan Municipal Boroughs has certainly not made things pleasanter for the Horseferry Road.

Another Gaslight and Coke Bill must be forthcoming for next session; but meanwhile the trouble of the Company lies deeper than any depth to which the pen of the parliamentary draftsman can probe. The consequences of a long period of maladministration, persisted in against the most pointed warnings, with Parliament and the public authorities watching yet powerless to interfere, are now being realized. By a coincidence, the actual condition of the Gaslight and Coke Company was displayed by analogy in a leading article of the "Pall Mall Gazette" of the 21st inst., which was addressed to the contemporary state of English railways. Allowing for the difference of subject, the strictures of this article might be applied word for word to the only gas undertaking in the world which has a magnitude of the same order as the big railways. "Very many of us "are interested financially in one or more of our railway "systems," runs the article, "and it appeals no less directly "to our pocket than it does to our national pride to be told "that, in efficiency, in initiative, and in general direction, "those systems leave much to be desired. Certainly in one "matter our railway directors have been preparing rods for "their own backs. For years past there has been almost "reckless increase of capital expenditure."

It is pointed out that since the last great railroad crisis in the United States, there has been a wise policy of charging very liberally to revenue on account of upkeep and betterment of the roads. "With us it has been very different. "There has been far too much readiness to strain after "immediate dividends; and complacent proprietors have not "realized that the capital accounts of our railway companies "have been increasing at a remarkable rate." Whenever did a proprietary stuffed with high dividends show itself otherwise than complacent? Moreover, the complacency of railway and gas shareholders is usually compulsory. Nothing that they can say or do individually will have the slightest weight with the Board; and as to any combined effort, it is not to be expected so long as the Board go on distributing sugar-plums. Shareholders' investigating committees are devices for shutting the stable door at the usual time.

There is to be trouble ahead in the railway world. The working expenses are rising to the danger-point; and directors make no sign of being awake to what is going on. Some chairmen, we are told, "have a nice way with them "of skimming over the capital accounts, and concentrating "all their efforts upon the growth in revenue charges." From his point of view, the addition to the coal bill is a god-send to the poor chairman. He can babble on that point to his heart's content, and show triumphantly how helpless boards of directors are in face of market vicissitudes. A good deal of the trouble arises out of the very respectability of our directorates. "Representative as they are of financial "interests, the question of dividends appeals to them at "once," whereas of the politics and business aspects of the working they are too ignorant to know their own incapacity. Nobody questions the absolute good faith of the Directorate of the Gaslight and Coke Company; but how bring home to these good, easy gentlemen the conviction that for the past five-and-twenty years the administration of this vast undertaking has been misdirected, and that the actual deadlock in which they at present stand is the natural consequence of their own errors?

The shareholders of the Company, when next they meet, must be told that they will have to submit to still greater sacrifices than those which the Board, with belated repentance, persuaded them to agree to last time, in order to get a Bill through Parliament. The Governor daintily nibbled at the leek on that occasion, as we remarked at the time; but he will have to acquire, or to feign, a stronger appetite for the nauseous dish when it is warmed up again. Of course, the shareholders will think it mighty hard that they should have to suffer for the mistakes of an Administration which has almost run its course. But that is the way of the world. The children, it is hardly necessary to remind oneself, must suffer for the misdeeds of the fathers. It is knowledge of this terrible law that impels men to have a wary eye to the future. But when or where in the last 25 years' history of the Gaslight and Coke Company shall the impartial critic find evidence that the Horseferry Road had any sense whatever of a "hereafter"? Dissipating reserves in payment of unearned dividends; dividing profits up to the highest statutory limit, and even making a virtue of the practice; keeping up works and plant from hand to mouth, without writing off dead burdens; charging everything possible to capital, instead of to revenue, contrary to wise husbandry; allowing the capital burden per ton of coal carbonized to grow; leaving old stations to become obsolete; and failing to understand the mind of the public with regard to the maintenance of an excessive price for gas—these are part of the record which the Directorate of the Gaslight and Coke Company have created in the sight of all men. The results are matter of arithmetic. No expert judgment is needed to appreciate their significance.

The criticism of the Company by the Metropolitan Boroughs before the Committee threatened to revive old questions of mismanagement, possibly in respect to the sale and stocking of sulphate and coke; but this attempt was properly stopped by the Chairman. The Directorate is, of course, responsible for everything that the Company have done amiss, or have failed to do as it should have been done. They have had a long run free of parliamentary control—far too long, for their own reputation and for the good of the undertaking and of the public. They have paid the highest possible dividends automatically; and now the mechanism is worn out and has broken down. It must go to Parliament to be mended, at the cost of the proprietors. In addition to altered machinery, however, a new spirit for the working of it is required. A sweeping reconstruction of the Board would go farther to put the Company upon better terms with the Municipalities and Parliament than any mere paper amendment of the Acts relating to the undertaking. Some other man of affairs at the head of the concern might do something for the investment, if he could be found. It is no use mincing words—the truth is that the present Horseferry Road Administration is hopelessly unpopular, discredited, and distrusted. A new Board is wanted, with ability, which the present Directorate has never exhibited, to look beyond the dividend of the moment to the interest of the undertaking as a whole, and in the future as well as for the passing hour. Mere moneyed men, with a number of directorships to crowd their time and distract their attention, have brought the Gaslight and Coke Company to the present pass. Those who are satisfied with things as they are, will see no censure in this observation. Those who are of the contrary opinion, will, of course, think differently. Even the Governor must now be sorry for having pitted himself against Sir James Rankin's Committee; but that blunder does not stand alone. The worst

of it is that, where things are in a bad way, there is always the possibility of going from one false position to another, and dimming the remembrance of one fault of omission or of commission by the perpetration of a greater.

Coal Output and the Trade Outlook.

THE First Part of the Home Office Report and Statistics on Mines and Quarries for 1900 gives somewhat more detailed information regarding the output of coal for last year than was contained in the preliminary summary noticed in the "JOURNAL" for the 19th of March last. The total output of the British Islands in 1900 is stated in the report now issued to have been 225,181,300 tons, of which 11,137 tons were obtained from open quarries, the rest from mines—an increase over 1899 of 5,086,519 tons. Scotland shows an augmented output of nearly 2 million tons; Yorkshire and the Midland district, about 1½ million tons each. The Newcastle and Durham districts only raised between them 183,304 tons more last year than in 1899 (Durham output being 165,516 tons less than before); while South Wales and Monmouthshire show a decline of no less than 428,697 tons—the effect evidently of the foolish output-restricting policy deliberately adopted by "Mabon" and his fellow-unionists. In every district, indeed, the output per miner fell off last year; the decrease varying from 3 tons in Yorkshire to 41 tons in South Wales, and averaging 18 tons per man, or exactly 4½ per cent. Had the output per man been the same in 1900 as the preceding year, the aggregate production would have been 11¼ million tons more than it actually was.

Whether the quantity of coal raised during the current year will exceed, or even equal, the output in 1900 is doubtful. The mines are certainly not working so regularly now as they were twelve months ago. The Board of Trade reports on coal mining each month indicate slightly lessened activity, and other accounts bear out these reports. During the four weeks ended the 20th of April, the collieries covered by the Board of Trade returns only worked on an average 4·9 days per week, against 5·2 days in the corresponding week of last year; more than 1 per cent. of the number of miners employed being engaged in collieries working two days or less per week, while 40 per cent. were at collieries working less than five days a week, as compared with 16 per cent. last year. South Wales is conspicuous for continued bad working.

In spite, however, of this slacker production at the collieries, the coal market does not recover its strength; and gas companies can now safely congratulate themselves upon having passed beyond that period of anxiety and financial trouble during which they were expected to look upon the delivery of a shipload of some kind of coal, accompanied by a fair percentage of rubbish (charged for at twice the normal price of best gas coal), as a favour for which they should be very grateful. For them to greet with anything but pleasure the proposal to put a tax on coal exports would have been almost more than human. The days when gas managers were sport for coalowners are, however, gone; and matters will now soon recover their accustomed course. If our information be correct, the greater proportion of the coal requirements of the Metropolitan Companies for the ensuing year has now been secured under contracts averaging somewhere about 9s. per ton f.o.b.—a drop of from 7s. to 8s. from last year's prices; and gas undertakings throughout the country will doubtless be able to secure, where they have not already secured, their supplies on something like equally favourable terms.

"For this relief, much thanks"—but to the natural course of events, not to the coalowners. The Board of Trade labour reports continue to bear witness to the slackening of business, which has brought down coal prices from the ruinous figures of last year. At the end of April, the percentage of unemployed stood at 3·8, compared with 2·5 at that date in 1900; 291 pig-iron furnaces were in blast, against 382 last year (representing a decrease in the consumption of coal of about 6 million tons per annum); while wages were seen to be falling off pretty considerably. During the first four months of the year, the reported increases and decreases in wages just about counterbalanced each other; but in April the changes reported were practically all in the way of decreases, chiefly among the coal miners in Northumberland, and iron and steel workers. As a corollary to these facts, an increase in the number of days lost through trade disputes is to be observed; the aggregate duration of such disputes being 605,000 days in April and 1,532,000 days in the four months, compared with 210,000 and 530,000 days respectively in those periods of 1900. And so, we are afraid, the sorry tale will proceed.

Not only in the coal trade is there gunpowder lying about which an increase of friction may at any time explode, but in other industries as well, notably the engineering. One of the journals of the iron trades remarked recently that "the "general situation is not improved by the spirit of unrest "that seems to prevail among the workmen." And the writer then proceeded to say that there appears to be a disposition to bring contentious matters to an issue. "One of "the most prominent of these questions is that of the pay"ment of skilled-labour wages for the working of automatic "machine tools. It is to be hoped," added our contemporary, "that wiser counsels of moderation will prevail; for "it is hardly likely that, under the existing unsettled con"ditions, employers will be willing, or indeed able, to make "many concessions." We sincerely trust that under no conditions will employers make any concessions to those who put forward such claims. To do so would be to injure their own business, the nation's prosperity, and the welfare of the men themselves. It is absolutely needful, if we are to exist as a commercial nation, that such mischievous nonsense should be strenuously fought against. One thing is very obvious, and that is that the good people who have argued, from the comparative immunity that the country has enjoyed from serious labour troubles during the past year or so of expanding trade and wages, that the working classes were now sweetly reasonable, and disputes were becoming things of the past, will find out their mistake before many years have gone by.

The State of Affairs at Bethesda.

IT is a long time since we mentioned the Penrhyn trouble in these columns; and in the interval several things have happened. Our readers will remember that the Special Commissioner of the "Daily News," who visited the locality with the object of ascertaining the facts concerning this alleged tyranny of the capitalist quarry owner over the humble labourer, saw reason to form a different opinion of the whole business. He flatly said that the strike had been "engineered" by two or three agitators in the neighbourhood who were not themselves employed in the quarries, and whose baneful influence over the men was being exerted to the utmost to keep the sore open. Feeling doubtful as to the strength of their position, these wire-pullers early in April engaged Mr. Ben Tillett to deliver an inflammatory speech to the strikers, which duly came off. Whatever this starring engagement of one of the members of the stock company of strike organizers cost the local people, it was all too dear at the money. Of course, Mr. Tillett called Lord Penrhyn "a cross between Pharaoh and Nero;" his Agent (Mr. E. A. Young) was a "jackal;" and the quarrymen were chattels and serfs. That is a regular part of the entertainment. He adjured the men not to be discouraged by want of money. Professional strike organizers are seldom discouraged on this account, and are usually first-rate hands at exhorting those who are out of funds to "stand firm."

Mr. Tillett's fustian soon died away; and after a week or two those who had imported it into the locality probably repented of their folly. Lord Penrhyn is not the kind of man to yield to the diatribes of a Tillett what he would not willingly grant out of his own educated sense of what is fair as between man and man. Once more his Lordship has offered terms of peace to the misguided quarrymen. A notice bearing the signature of Mr. Young has been posted, stating that the Penrhyn quarry will be open on Tuesday (June 11), to all the late employees who have applied for work and have been accepted. Efficient police protection will be given to those men who return to work, if necessary. Certain of the quarry rules have been modified, as it was announced in February would be the case; but there is not a word in the notice to encourage the notion that the management have yielded one hair's breadth of their natural rights. If the quarry is reopened, it will be as though the strike and lock-out had never been. Not even Welsh rancour can see anything else in the announcement.

Consequently, the forces of evil are bitterly antagonized. The so-called "men's representatives" are whistling very loudly in friendly newspapers, to keep up their courage, and have at last screwed themselves up to the point of calling a "mass meeting" at Bethesda for yesterday (Whit Monday). So confident are these noble souls of the "firmness" of the men in going on starving to gratify their spite and vanity, that they do not intend either to speak themselves at the meeting, or to call in any outside speakers. This is a slur

upon Tillettism, doubtless justified by the experience already recounted. Another report from the spot, which appears to be written in the spirit of truth and seriousness, says that the notice of the Quarry Manager, although not altogether unexpected, has put the strike leaders in a quandary. Lord Penrhyn has all along maintained that the men would return to work peaceably enough, but for the existence of a secret tyranny usurped by a few men, which the others, being cowards, have feared to set at naught.

Of course, the heads of the Quarrymen's Union have strenuously denied that there is any truth in this assertion; but it is curious that already there are in circulation dark rumours to the effect that "disturbances are apprehended," and that "there will be bloodshed" if any men attempt to resume their occupation in the quarry. The police-sergeant in charge at Bethesda is reported as not anticipating anything of the kind. He would probably be equal to the task of dealing with all the official Trade Union leaders single-handed, if they were to come out in the open. Disturbances, however, very rarely happen after they have been talked about. At the beginning of trouble, when ignorant men's heads are hot, and they are excited by the sense of acting in a body, violence is to be expected; but not after a few months of strike pay. The only men who are in a condition to fight then are those who have had the dispensing of the strike money; and they are far too careful of their skins, and too tenderly nurtured, to run any unnecessary risk.

Piracy of Designs.

A CASE of particular hardship to Messrs. Fletcher, Russell, and Co., Limited, has been brought to the attention of our readers through an advertisement which appeared in the "JOURNAL" last week and another which is published in this issue; and these notices suggest a little consideration of a question of moment to manufacturers not only of mantelpieces but of appliances which have more intimate connection with the gas industry. The amendment of the Patent Law has been a topic of recent discussion. The amendment of the law relating to the registration of designs also appears to be wanting in the one important particular of the duration of the term of protection; and a few changes in other directions, which would have a greater deterrent effect on copyists and pirates of designs, might at the same time be made with advantage. Now, in the case in which we are for the moment interested, the Dorrator Iron Company, Limited, were found to be casting and selling mantelpieces of the registered designs of Messrs. Fletcher, Russell, and Co. The hardship in this and in similar cases may be strikingly shown in few words. To get a series of four or five mantels, the pattern costs may approach £1000. A considerable number of mantels must be sold to recover this initial outlay; and yet the term for which the manufacturer is protected by the registration of his designs only extends over five years. It is a very exceptional thing that an article such as a new pattern of mantel, or a gas-fire for the matter of that, becomes known and pushes its way into popularity in less than (say) three or four years out of the five-year term; and thus little time is left to the designer, or manufacturer owning the design, to recoup himself his heavy expenses, much less to profit by his ownership. Then directly the registration period has lapsed, any firm inclined to be unscrupulous can actually buy the goods and take casts direct from them—thus saving pattern costs, and enabling competition to be set up with the firm in whom the design was formerly vested, at a price perhaps of several shillings per article less. Thus they profit from the design and from the expense and worry incidental to making it known in its early life, and of which expense and worry they have borne no part.

There is an injustice here which requires remedying; and the only possible remedy is an extension of the period of registration. A distinguished patent lawyer is interesting himself in the amendment of the law relating to trade marks; and it is believed that this question of the extension of the term of registration for designs has not escaped his observation. If this is true, and his efforts are successful, he will deserve the thanks of all honest manufacturers. For the privilege of obtaining a prolongation of his protective rights, no manufacturer who has an article worth shielding from piracy would have any objection to paying an extra fee; and in these days of increased and increasing taxation, the Chancellor of the Exchequer might find it to his advantage to support this plea for an extension. As it is, with such a short period of protection before him, a manufacturer has no encouragement to produce new and choice designs, knowing that at the end of a brief term a large part of the benefit which in equity is his due will pass to his competitors. Perhaps in some measure this accounts for the barrenness of the gas-fire industry in new design, which barrenness we have lately lamented. If so, then on two grounds we urge the necessity for an amendment of the law relating to the registration of designs—first, justice to manufacturers; secondly, the needs of the gas industry.

Certain Doings of the London County Council.

THE London County Council passed a very happy time last week, in its favourite employment of getting its fingers into some more pies. There was on the *agenda* a report of the Local Government and Taxation Committee upon the registration of shareholders in statutory supply companies. The Council had inquired of the Committee whether any means at present exist of ascertaining the names and addresses, and the nature and extent of the interest of debenture stock and share holders in the Companies supplying gas or electricity, water or hydraulic power, undertaking tramway or telephone service, or owning docks or wharves within the County of London; and, if not, as to the desirability of the Council seeking parliamentary powers to bring all such Companies under the obligations of the Companies Acts in this regard. In other words, the Council "wanted to know, you know," who everybody is in these properties. The Committee to whom the question was referred reported that the names of shareholders in statutory Companies are not registered at Somerset House; and further that, though it might be useful if this were done, it is not competent for the Council to promote a Bill with the object of making this registration compulsory. Consequently, the Committee suggested that a request for Government action in the matter should be addressed by the Council to the Board of Trade. When the question was reached at the meeting last Tuesday, a member asked what was the object of the proposed demand for Government action. Unobjectionable as the proposed public registration of the proprietors of statutory companies is in itself, what had the Council to do with such a proposal? Mr. John Burns, M.P., took upon himself the defence of the recommendation, and soon showed his reasons, which were to enable the public actions of public men to be further scrutinized in the knowledge of their holdings in statutory companies. It is only another move in the Progressive game of hounding out of public life every man of social position and wealth. In the course of his speech, Mr. Burns made frequent use of those flowers of oratory which he gathered at street corners, and cannot drop. He also complained that England is "being vulgarized too quickly." He flatters himself. At a later stage, the Council agreed to a recommendation of the Public Control Committee for a six months' testing of the gas supplied by the three principal Companies, "with "a view to ascertaining in what proportion water gas has "been added to the ordinary gas." This decision was taken upon the occurrence of a death from gas poisoning in the Commercial Company's district. As mentioned last week, the matter has been considered by the Public Control Committee, who found that the Council have no power to deal with possible danger arising to consumers from the addition of carburetted water gas to the town's supply. Meanwhile, the Chemist is to ascertain the facts, at an estimated cost of £4 per week. It will be interesting to learn the results.

WATER AFFAIRS.

Water Companies and the Consumers.

THE serenity which is a characteristic feature of the meetings of the West Middlesex Water Company was not disturbed by anything which occurred last Tuesday, when the Directors gave the proprietors, through their Chairman, Mr. Edmund Boulnois, M.P., an account of the progress of the undertaking during the past half year. The Company have already a lucrative district; and it is improving every day as the result of the building operations which are rapidly destroying the rurality of Cricklewood and Willesden. These additional demands upon the plant necessitate the expenditure of large sums on capital account; and therefore it is not surprising that about £52,500 was spent on storage, and £7400 on distribution works in the six months ending in March. However, there was a good return; the revenue amounting to £145,508, or £1504 more than in the corresponding period of 1899-1900. With a balance to the credit

of the dividend and interest account of £58,000, in round figures, the Directors were in the comfortable position of being able to recommend a dividend for the half year at the rate of 10 per cent. per annum; and their pleasure, it may be taken for granted, was participated in by their co-proprietors on the opposite side of the table. But there are others besides the proprietors who share in the present prosperity of the undertaking. As the Company's dividend-paying powers are limited to the rate of that just declared, the consumers benefit in the shape of a rebate equivalent thereto from the statutory water charges. This they have done for some few years; the first concession made being 5 per cent., the next 7½ per cent., and the last (in 1894) 10 per cent. When it is stated that the amount of the rebate in the past half year was £15,000, it will, we think, be acknowledged that the consumers are profit-sharers to no inconsiderable extent; and seeing that a constant service is now afforded all over the district at a price which, in the case of a moderate-sized house, with bath-room, works out to less than a penny for each working day, there is scarcely any justification for the well-worn complaint that water companies' charges are exorbitant.

In view of the benefit derived by the consumers from the rebate above referred to, any legislative enactment, resulting from the interference of their so-called "protectors," which would tend to reduce it, is to be deprecated. Yet this is precisely the effect of the sinking-fund clause which has of late years been forced upon the London Companies. In the past half year, the West Middlesex Company paid over to the City Chamberlain £7653—a far larger sum than that which appeared in the accounts a year ago; while the Lambeth Company also swelled his fund to the extent of £2697, or £1923 more than the sum paid into it in the corresponding period of 1899-1900. Mr. Boulnois plainly told the proprietors that this annual increase would certainly lead in their case to a diminution of the rebate which the consumers now enjoy, unless Parliament did something towards relieving the Companies of what he characterized as an extremely onerous and singular impost. That such an eventuality was not improbable was clearly foreseen by Lord Llandaff's Commission; for they pointed out that as soon as the West Middlesex Company became liable to make payments to the Chamberlain, they might have to raise their charges, which they had of late years been able to reduce. Should it ever become necessary, as the result of the interference already alluded to, the consumers may well pray to be saved from their friends. The Royal Commission recognized that the possible consequences of the clause seemed to go beyond the intention of the Committee of the House of Commons who sanctioned it; and they pointed out that in any Act authorizing purchase it would have to be considered and dealt with. This matter, among others, will doubtless have due attention from the President of the Local Government Board when drafting his promised Bill; and we believe Mr. Boulnois, in expressing his personal confidence that in this Bill the just and lawful interests of the Water Companies would be safeguarded and preserved, clearly voiced the opinion of his fellow-Chairmen.

To return, however, to the subject of the consideration shown to water consumers by directors of water companies, Portsmouth may be cited as a case in point. At the half-yearly meeting, last Thursday, of the Water Company supplying that borough (whose undertaking, by the way, the Corporation are very anxious to acquire), the Chairman stated that the change in the basis of assessment from rental to rateable value voluntarily made by the Company had resulted in the relinquishment of £5000 to the consumers. This is a good round sum; but it has staved off litigation, and secured an amount of good-will which may in the end prove to be worth more than all the money paid for it.

Blast-Furnace Gas-Engines in Europe.—According to a report presented by Herr F. Lürmann at the last general meeting of German metal workers at Düsseldorf, blast-furnace gas-engines are little used in England and the United States. In France there are a great many small engines of the Seraing or the Otto type; their total capacity being 8000 to 9000 horse power. In Italy there are engines of this kind to the total of 1600-horse power; and in Austria to about 2800-horse power. The power of these engines is much greater in Luxemburg—viz., 7600-horse—and in Belgium it is about the same; whereas in Germany, 36,000-horse power, or 58 per cent. of the power utilized in Europe. Herr Lürmann estimates that a saving of at least 7·5 frs. per ton of cast iron manufactured is realized by the use of blast-furnace gas in the way he advocates.

ESSAYS AND REVIEWS.

A VIEW OF THE DIRECT EMPLOYMENT OF LABOUR BY MUNICIPALITIES.

From Ministerial statements in the House of Commons, it does not appear likely that any attempt will be made this session to resume the inquiry into the subject of municipal trading. The Leader of the House has frankly expressed his regret at this unsatisfactory interruption of an investigation in which so many members are interested in different ways; but there would be so much opposition to the re-appointment of a Joint Committee on the subject, that it is felt to be inexpedient to trespass upon the limited time of the House of Commons with a proposal of this nature. Regard must also be had to the truth that many of those who are most interested in the matter are sceptical as to the practical value of any general inquiry into the "principle" of municipal trading. It is easy to distinguish the principle in a particular example of this kind of enterprise; but, in point of fact, every proposal of this nature is dealt with on its merits, and without very much regard for the theory of the thing. At the present juncture, therefore, while controversy on the principle of municipal trading is in suspense, it may be opportune to offer a few observations on the subject, regarded as a part of the still wider topic of local government economics.

At this very time, the Imperial Government are in the throes of a conflict between those politicians whose one cry is for economy, and those who are reluctantly driven to acquiesce in the necessity for larger expenditure on national objects, and a corresponding increase of taxation. Debate after debate in the House of Commons has demonstrated the futility of crying "Save" without indicating what is to be saved, and how. It is precisely the same with that other branch of the national expenditure which is in the hands of local authorities. There is scarcely a municipality, or an urban district, in the length and breadth of the land, in which the rates are not continually rising, notwithstanding the coincident increase of rateable value. The very men who shake their heads over the extravagance of the Imperial Government are often those who, in their own sphere, find themselves constrained to consent to the spending of ever more and more public money. Most householders are taxed more for local purposes than they are for the needs of the Empire, and find themselves as powerless to apply the rule of retrenchment in the one case as in the other.

This is where the question of municipal trading comes in. Of all the ordinary incentives to this kind of enterprise on the part of local authorities, the strongest with the average ratepayer is the promise of saving the rates, which is usually held out to him when a project of gas transfer or electricity supply is trembling in the balance. This expectation, with perhaps the additional hope of a better service, is, indeed, the ordinary bait that catches the ratepayer. He will not be frightened away by any warning at the time that what is proposed is a piece of municipal trading. This constructive reproach is something that is thought of later, when the hopes of saving the rates have died away, and been replaced by the chill reality of increased rating. Obviously, if members of local authorities were all wise, and ratepayers apt at understanding their own business, these tempting offers of profitable trading would be closely scrutinized in advance. Official position might even be found, in a properly equipped local authority, for a public censor, whose duty it should be to criticize, with the advantage of knowledge and ability, every project involving the possibility of throwing an additional burden upon the ratepayers. As it is, criticism of this kind is left to be exercised in part by the Official Auditor, after the money is gone. "Cockerton" should be called in earlier, if he is to be of any real service to the community as a check upon official rashness, or the disingenuous promptings of particular interests in the organization of local self-government.

For it is, or should be, perfectly obvious to the thoughtful ratepayer, that the continually increasing rates of which he so justly complains are due to a multiplicity of causes which can never be touched by vague invocations to economize, and certainly not by returning candidates to local office who ignorantly pledge themselves to retrenchment. However well-meaning and sincere such men may be, no sooner are they elevated to the coveted seat, than they find themselves as powerless as the proverbial fly on the wheel. They have first to learn the business of local government; and by the time they have acquired the requisite knowledge of the routine of administration, they have lost the fine fervour for reform and retrenchment which they had outside. This is, of course, assuming that the member has no particular axe to grind. If he has—if he goes into the council as a representative, or delegate, of Trade Unions, or the liquor trade, or the landlords, he will usually prove apt in bending the forms and routine of public business to his own purpose.

English people are fond of saying that the administration of their local government units is not nowadays so corrupt as it used to be in ante-Reform days, and is yet at the present time in many countries. That is quite true; and it is a state of affairs which well-wishers to England may take for granted wherever there is no very special reason for suspecting the existence of a different

condition. British local government, like Imperial Government, is honest, with the honesty which one likes to feel is a characteristic of the race that invented Trial by Jury, and alone knows how to work it. But it is a common error to suppose that this honesty is everything. Acute observers of affairs have pointed out that mere personal corruption on the part of a governing class does not necessarily entail inefficiency of the actual government. Corruption in high places, as we now understand it, was never so rife as during the period of the Tudors in England, and in France under the Grand Monarque; yet both these eras were glorious, and of great prosperity for the people. It is the same in New York at the present day. Many municipal duties are very well done by some corporations of very indifferent reputation.

Stupidity in administration costs more than venality, if the two evils must be set one against the other. The same may be said of slackness, heedlessness, poverty of judgment, timidity, and personal vanity and ambition. It is a small thing that the bulk of members of a local authority are honest, if they are liable to be led away by every plausible wirepuller, if they cannot see the good of the public in things that come under their purview, or if they are as wax in the hands of a masterful mayor or a self-glorifying official. All these considerations, with others that might be mentioned, but will occur to experienced readers of these lines, militate against the idea that local authorities should be given liberty to undertake work that is not absolutely incumbent upon them. Call it trading, or anything else—but especially as regards trading enterprises—all government action, as Bentham maintained, is essentially an evil. The less there is of it, the fewer the chances of waste, loss, wrong, and mischief. Although Benthamism is out of date to-day, the old philosopher did utter some eternal verities; and this is of them.

There is a branch of municipal trading which sorely exercises the minds of local administrators in different parts of the United Kingdom at the present day. We allude to the trade in labour, usually classified as Municipal Works Departments. This is a kind of enterprise in regard to which the true motive of the promoters is commonly unavowed, and public support is besought for quite other reasons. The ordinary member of the local authority is amused with the usual promise of a saving of public money, which he can go and talk about to his constituents; while the astute individuals who have the matter in hand chiefly intend that it shall provide a sufficiency of "soft jobs" for their supporters. In public, this is spoken of as exhibiting the local authority in the praiseworthy capacity of a "model employer." One of the latest municipalities to adopt this policy of "direct employment" is Sheffield; and the accession of the Sheffield City Council to the ranks of the direct municipal employers of labour is hailed with every expression of delight by the self-styled Progressive journals, which proclaim every municipal scheme of expenditure as constituting "Progress," whatever the object.

It appears that, before the Sheffield City Council decided to establish a Works Department, the Surveyor was instructed to ascertain what other British municipalities are doing, or have done, in this way. Out of a long list of local authorities who have trading departments of various descriptions, in connection with which they employ more or less labour, only five turned out to be proud possessors of Works Departments. Three of these —the London County Council, West Ham, and Battersea—are obviously of political origin; and their history has not been unchequered. The others are of special character. Of course, from time to time many public authorities find themselves so situated as to be compelled to carry out building and engineering works on their own account; but the experience of those that have deliberately undertaken to play the part of the "model employer" in connection with a general Works Department, has not been happy.

Nevertheless, Sheffield is bent upon trying it once more; and time will show the result. The reasons—the theoretical excuses —for the venture are both fair and familiar. It is occasionally difficult to obtain tenders for the Corporation work; there is sometimes delay in the execution of contracts; the best work is desired; prices have a tendency to rise. None of these excuses warrants a public authority in undertaking builders' work. Similar ones would support the establishment of a municipal bakery or brewery. They did, as a matter of fact, suggest the experiment of a municipal "printery" at Boston (Mass.). The story of this venture is retold in the "Municipal Journal" of the 17th inst.; and it is very instructive. The "printery" has been working for four years at a loss to the city, but at considerable benefit to the employees in respect of short hours, holidays, and increased wages. On the face of it—that is, in theory—the venture ought to pay; but, as a matter of fact, it does not. Of course, in the United States, the "politicians" are made to bear the blame for such failures.

In this country we have our politicians too; and they can be inspected in action at the London County Council. Within the last month, the London County Council were asked to undertake the responsibility of settling the "demarcation" trouble between the Trades Unions connected with building, by setting out in their specifications the portions of work to be allotted to the different trades. Later, the Council were implored to fix a minimum wage of 30s. per week for all their employees. Both proposals were rejected; but the pains of their promoters will probably not be lost. So the merry game goes on; and yet there are people who wonder at the incessant rise of the rates! The cause of economy will never flourish, so long as there is only one vague, general desire for thriftiness in the expenditure of public money, against innumerable plausible pleas for its outlay on particular objects, every one of which it is somebody's special business to look after. Mr. Gladstone once remarked that the public cause was always worsted in conflict with private interests, because the public sometimes slept, while the interests were always alert. The world has not gained much since this observation was made, by the modern fashion of taking the private interest into the public body. It looks after itself all the same.

ENGLISH AND AMERICAN WORKING MEN.

It will be within the recollection of our readers that the Special Correspondent of "The Times" who recently visited and reported upon the chief engineering works in the United States, laid particular stress in his articles upon the marked difference between the attitude of the English and that of the American working man towards the question of output—the former seeking to turn out as little work as he dare, the latter to turn out as much as he can, in a day's employment. The English manufacturer was shown as being seriously handicapped in the race with his American competitor by the ridiculous restrictions placed upon the output of both men and machines through the influence of Trade Unionism—restrictions to impose which no attempt is made in the States. The first question that naturally suggested itself in considering this wide difference between the policy pursued by labour on the two sides of the Atlantic was: Are there no Trade Unions in America? And when it was recollected that Trade Unions are plentiful, active, and powerful in the States, while strikes are not infrequent there, and are in general waged more fiercely than here—being very often attended by scenes of physical violence—it became evident that the difference does not arise from the presence or absence of Trade Unions.

That, however, is not to say that the Trade Unions have nothing to do with the difference to which we have referred. It is merely to say that the Unions across the Atlantic pursue an entirely different policy, in regard to workshop management and the output question, from their English brethren. Unions in America do not attempt to interfere with the employers' control of the shops, nor to restrict the amount of work which any individual workman does in a day. This striking and important difference in Trade Union policy is, of course, founded upon an equally well-marked difference between the natural attitude towards these questions of the men who compose the Unions in both countries. This variance and its causes are discussed in very interesting fashion in the April number of the "Edinburgh Review," in an article on "American and English Working People." The article is founded largely upon a translation of a work we have long intended to notice—Levasseur's "L'Ouvrier Américain," and on Mr. C. B. Spahr's book, "America's Working People." There is, further, a considerable amount of original matter and information in this very readable essay.

The distinguishing characteristic of the American workman, says the writer in effect, is his eagerness for work. He appears to realize the fact, which it would seem to be impossible to impress upon the Englishman, that the wage-earning capacity of a man increases at a higher rate than his output of work. That is to say, that the more rapidly and strenuously he works, the higher rate of wage per unit of work can his employer afford to give him. [An employer can afford to pay the man who gets 100 units of work out of a machine in the same time as another requires to obtain 50 units, more than twice the wages he would pay the second man, because his capital charge per unit is reduced 50 per cent. by doubling the machine's daily capacity.] As regards output—though not always as regards the employment of machinery—the American workman certainly seems to be quite free from the economic fallacies that are the fond possession of our unionists, and that are so serious a handicap upon the English employer. The men "over there" will strike readily enough for higher wages or shorter hours, but never against having to work at full speed during their working hours. Their attitude is thus described by the writer in the "Edinburgh Review."

There is plenty of Trade Union spirit among American workmen in regard to improvements in the conditions of labour, such as the enhancement of rates of wages, the diminution of hours of work, and, *à fortiori*, where they exist, the removal of such abuses as the survival of the truck system. On such matters as these, they readily draw together, when the economic conditions appear to offer any prospect of amelioration, and sometimes also when the chances of success are but slight. Nor are they by any means [in all cases] exempt, as has been seen, from economic delusions on such questions as that of the influence of machinery on the prosperity of workpeople. But there is among them generally an attitude of mind in regard to work itself which differentiates them broadly—to their employers' advantage and their own—from that which is characteristic of the workman in too many trades in this country. The American working people do not look upon work as a curse or an evil, to be kept within the smallest possible limits, and made the basis for as large as possible a claim for compensation at the hands of those for whom it is undertaken. On the contrary, speaking broadly, they look upon work as not only the inevitable but the healthy and natural, and on the whole interesting and agreeable, occupation of the greater part of mankind during the greater part of their lives; and they throw themselves into it, almost whatever it may be, with vigour and zest, *on account of its inherent interest*, as well as with a view to the remuneration it will secure.

American work, in a word, is as a rule strenuous and intelligent. On this subject the evidence appears to be unanimous,

The italics are our own; the words emphasized describing a mental attitude towards work which, in our opinion, makes a supreme difference between those who occupy it and those who do not. Anyone who has had anything to do with the supervision of a considerable number of employees, will know the almost incalculable difference in value between the man who works for the sake of the work and him who only works for the sake of the pay. You can trust the first man, you must watch the second constantly—if you keep him. Unfortunately, the choicer variety is less easy to find than the other; so that very often no option exists.

The evidence as to this keenness for work among the Americans, it is to be noted, "includes occupations which are notorious, with us, for the amount of idling and shirking to be seen in connection with them, and which, even in the States, are associated with a good deal of economic heresy and narrowness of view." It was, for instance, especially noticed by M. Levasseur in the building trades! "*Ces ouvriers travaillent consciencieusement et vite.*" Imagination is not equal to picturing the English bricklayer, carpenter, or house painter working "conscientiously and fast"—indeed, one may express doubt as to whether there is more of conscience in the American than in the English workman. Mr. Spahr confirms M. Levasseur. He says: "At the Carpenters' Union head quarters [in Chicago], when I spoke warmly of the Union victory in securing the eight-hours' day, I was surprised to hear one of the carpenters remark: 'Yes; but if we won seven hours, half of us would be dead.' When I asked what he meant, he replied that every time the hours were shortened the bosses made them work just that much harder . . . and there was no power to make any contractor keep any man who did not turn out a remunerative quantity of work."

What, then, is the secret of this wide difference between the English and American attitude towards work? It lies, in the main, in the influence of climate upon national temperament; for the difference exists, not only in regard to the working, but to all other classes. The whole of the human machinery in America is run at a higher speed than in Great Britain—and, be it said, is consequently the sooner exhausted. Owing, however, to the constant influx of new blood into the States, fresh fuel is always forthcoming for the fire; and it will be many generations hence before the effect of the premature exhaustion of labour becomes apparent. In a lesser degree, the difference between the energy of the worker in England and in America is the same as that between a man working in pure oxygen and one working in the ordinary atmosphere—the former develops a feverish activity and abnormal energy, but quickly burns out; the latter pursues a more moderate course, but endures longer. This is put in another way by the writer in the "Edinburgh Review." He says:

The keen, dry air of the larger part of that area in the States in which industrial operations seriously competing with our own are carried on, is a constant and powerful incentive to activity of body and mind. Its results are seen in the strenuous lives led by persons of every class and occupation. The intensity of the nervous stress daily submitted to, and apparently with something like enjoyment, by the average professional and business man in the States, bears the same kind of relation to that which is usual with us, as is borne by the manner of life of all but our leisured classes to that common in England before the days of telegraphs and telephones.

This would not be possible, so far as the working classes are concerned, were it not for the fact that wages are on the average so much higher in the States than here that the artisan there is able to eat a much larger quantity of meat than his English rival can afford. Contrary to the general belief, the cost of living in the States is not materially higher for the workman than in this country. In the American working man's budget, "rent is probably the only item which, as a rule, is considerably larger than is usual in this country, having reference to the article obtained. Meat is about as cheap as, or perhaps somewhat cheaper than, with us. . . . It seems doubtful whether the total cost for dress is more for a working-class household of the same size in the States than in this country."

There are other factors tending to make the American a very highly efficient worker. Chief among these "is the democratic structure of society in the United States, and the absence in the industrial sphere of anything corresponding to those sharply-marked distinctions of class which are so perceptible through the factory and workshop systems of this country. There is, of course, plenty of careful grading in the finely-organized manufacturing establishments of the Great Republic; *but its basis is purely one of professional merit.* There is no barrier there—vague and indefinable perhaps, but none the less real—such as still makes it always appear much more probable than not, even to the good English workman, that he will die a workman. To the American artizan of the same relative quality, the chances seem excellent that he will have raised himself to a position, not of social superiority, but of greater comfort and of larger leisure. *The upward path is always open.*"

Then there is the higher level of intelligence prevailing among the younger men in America, due partly to more thorough education, but largely to parental example and training leading the rising generation to take interest in their secondary and technical school courses as being the stepping-stones to that supreme interest in life—work.

The result is that a large proportion of the youths and young men . . . enter the works with a general intelligence so well trained that they are speedily able to apprehend the principles of the machinery on which they are employed. Thus prepared, they find nothing uninteresting or ignoble in the limited parts assigned to the eye and hand of man in many of the highly-specialized processes by which American manufacturing industry is increasingly distinguished. If put to such work, it is their aim that their machine should produce a "record" in their works, and that, if possible, *by improvements at their suggestion*, their works should produce a "record" in the States.

What lessons have these differences and their causes for the English employer of labour? To induce in the workmen the zeal and activity which characterize the American artizan, some share of the benefit accruing to the employer therefrom must be assigned to the workman. To induce in him a greater interest in his work, he must be made to feel he is working for and benefiting himself—that he is not only in the shop, but of it. This may in large measure be accomplished by profit-sharing and co-operative ownership, but not to the fullest possible extent. They must be supplemented by "promotion according to merit," carried out as far and as widely as possible. Every workman ought to be animated by the idea, to have before him the possibility, of being some day general manager. The upward path should always be open. Further, every man should be encouraged to propose improvements in methods and processes, and should be generously compensated for every suggestion valuable to the undertaking. Then, again, every encouragement should be given to those who continue to educate themselves, especially to those who study the technology of the industry. Trained intelligence should be paid for at its full value—partly in justice to those who have acquired it, partly to stimulate and encourage others. And, not least, the efforts of Trade Unions to hinder progress on these lines must be everywhere strenuously resisted.

These are but roughly sketched notes of the thoughts that are induced by a consideration of the different relations existing between workmen and their work on the two sides of the Atlantic. Those interested in the labour question on this side, should read carefully for themselves the article in the "Edinburgh Review" to which we have referred, together with "The Times" Correspondent's articles on "American Engineering Competition." We will close with a quotation from a further letter by the same writer in "The Times" for April 10.

A big manufacturing business is not the work of one man alone. Of course, one man is paramount; but he must, however able, depend upon assistants for much of the executive work. Almost on the last day of the past year, there died a man who built up a gigantic business and accumulated an enormous fortune, by his own genius. Perhaps his most essential characteristic was the wise liberality with which he treated those who worked with him. Lord Armstrong laid the foundations of what was at first a modest engineering establishment, by a native talent as an engineer. As Elswick grew, he had to transfer some of the management, first to one, and then to another. Had he had the limited intellectual horizon of many, he would have kept a larger share of the profits to himself, and concluded that a few hundreds a year was sufficient pay for departmental work. Probably he would then have died years earlier a comparatively unknown man.

ELECTRIC LIGHTING MEMORANDA.

The Passing of the Preamble of the Mono-Rail Electric Express Railway Bill—Nature of the Opposition—Yorkshire Electric Power—Manchester Electricity Supply Finance.

THE preamble of the famous 120-miles-an-hour-railway Bill has been passed by the House of Lords Committee, after a long and tedious inquiry, in the course of which some of the best and also the worst features of the Private Bill system of this country were exhibited. Most of the opposition came from vested interests in the transport arrangements between Manchester and Liverpool, and the fact of this failing to stop the Bill is a sign of the times. If it should ever be made, and work satisfactorily, the new railway may be expected to seriously affect the business of the Cheshire Lines Committee, and consequently place in jeopardy the earnings of the 8 million pounds' worth of railway belonging to the Committee. Yet the House of Lords Committee disregarded every consideration arising out of this prospect. Nor did the opposition of the Corporation of Salford, who thought the scheme destitute of public utility, avail to procure its rejection on this account. The engineering and electrical evidence for and against the practicability of running single cars at the stated speed on a single rail was more interesting than convincing. One of the few points held in common by the witnesses was that, for all practical purposes, the limit of speed has been reached on ordinary two-line railways. There was no serious denial of the proposition that on a single line of rail it should be possible, with electric driving, to attain the stated speed of 120 miles an hour.

As to the details of the rolling stock, however, there is still so much uncertainty that it seems strange the Committee passed the preamble. It was admitted by the promoters that the cars and their attached motors must be proportionately very heavy for the work to be done; and it was not at all clear how the centre of gravity of the moving parts was to be related to the motor axles. Several witnesses of the highest technical authority condemned the scheme as crude and impracticable. Some said that the structure of the permanent way would not be strong enough for the purpose; others questioned the disposition of the motors. This criticism impressed the Committee, as was shown by their

adding to the Bill as passed a proviso relating to the position of the centre of gravity of the moving load. It seems more to the point to inquire how such a line, if constructed with every possible regard for public security, can ever really pay. Unless the ordinary experience of similar experimental schemes is to be belied in this particular case, the work will cost at least half as much again to make ready for use as the estimate provides for. With no intermediate traffic to help the business during slack hours, and everything standing idle at night, it is difficult to see where the paying traffic is to come from. Finally, with memories of the Ship Canal to guide them, it is not likely that local moneyed people will rush to find cash for this outlandish scheme.

The remaining electricity-in-bulk generating schemes, which were awaiting their doom when we last wrote, have fared tolerably well. The two Yorkshire Bills were considered by the same Committee; and in the course of the proceedings, the South Yorkshire Bill was withdrawn. The remaining scheme was commended to the Committee as a local manufacturers' Bill; and was opposed by the electricity supplying local authorities, who wanted, as usual, to have an absolute veto on the laying of the Company's mains in their districts. It was a feature of the promoters' case that they claimed to supply railways and canals. They had the support of many public authorities and trading interests. In the end, the preamble of the Bill was passed, subject to provisions excluding the Company's mains from being unnecessarily laid through certain parts of Bradford, Leeds, and Sheffield. In the course of the proceedings, the suggestion was heard that the Leeds Corporation had offered to supply electricity at $\frac{3}{8}$d. per unit for power, with a view to staving off competition. This evidence goes to show how little likelihood there is of corporation electricity supply in these parts proving a profit-making business.

The last consideration brings us to the subject of a very plain-spoken article in the current number of the "Electrical Review," on some financial aspects of municipal electricity supply, illustrated by the example of Manchester. Corporation electricity supply in Manchester is commonly reported to be a particularly successful business; but it has transpired that Manchester has not escaped the trouble of most municipal electricity supply undertakings—an open capital account, and a growing inadequacy of revenue. Extensions of mains have been made out of all proportion to the outlay upon generating plant. During the past year, £150,000 has been spent upon new mains on the outer fringe of the district; while for various reasons only £29,000 could be laid out upon enlargements of the plant required to supply these mains. Such a disproportion speaks for itself, and needs no detail explanations of the effect of the state of things thus created upon the business of the undertaking. Curiously enough, but perhaps naturally, our electrical contemporary misses the point of the recent proposal in the City Council that the charges for electricity should be raised in order to enable profits to be made. It protests that this proceeding would be trying to stretch the cloth to be cut, instead of cutting one's garment according to the amount of cloth available; and it sympathizes with the view of the local Press that to do anything of the kind would be most unwise. Yet this is precisely what the same one-eyed counsellors aid and abet the City Council in doing by the Gas Department. Why should one city department be treated differently from another? Where is the unwisdom of increasing the price of electricity in order to make a municipal profit, while poor gas consumers are actually at the same moment surtaxed for this very object?

THE WATER SUPPLY OF NEW YORK.

In a previous article (see *ante*, p. 1112), a sketch was given of the history of the water question in New York, from the days when the inhabitants relied mainly upon wells and rain-water tanks for their requirements of water, down to August, 1899, when the Ramapo Water Company endeavoured to negotiate a contract with the city which would have put the future of the water supply into the hands of that Company. The agitation to which the proposed contract gave rise, resulted in the drawing up of two valuable independent reports on the whole question, both of which have been published, and can be obtained in New York. The main portions and a summary of these reports have, however, been printed as a paper in "Municipal Affairs" (P. S. King and Son) for last September, compiled by Mr. M. N. Baker.

Both the inquiry instituted by Mr. Bird S. Coler (the Comptroller of the City's Department of Finance), who led the opposition to the Ramapo scheme, and that carried on under the auspices of The Merchants' Association of New York, appear to have been conducted in a thorough and able manner; the latter occupying for some months the attention of a considerable staff, both clerical and legal, in addition to numbers of engineering experts. The two reports are unanimous in condemning the Ramapo proposal, and, further, in urging the necessity for "immediate steps" being taken towards securing to New York an increased supply of water. This recommendation has not long had to wait for the endorsement of events. The experiences of the early months of this year will have convinced those of the citizens of New York who needed proof of the fact, that something is rotten in the state of their city's water system. The reports are further agreed that the scandalous waste of water—put by the Merchants' Association Committee at "from 120 to 150 million gallons daily"—should be diminished "by the extended use of meters;" though neither consider that such diminution of waste as might be practicable would put matters right for more than a short period. Mr. Freeman (the Engineer employed by Mr. Coler), however, is of opinion that only a small additional supply would be needed, were the waste cut down to "a proper figure." But, from his report, it is evident that he is not sanguine of that waste prevention being achieved, as he recommends the acquisition of an additional supply "on a comprehensive scale." The following are the conclusions arrived at by Mr. Freeman.

1.—Although the consumption of water will very soon (the report is dated March 23, 1900) be uncomfortably close to the safe limit, with prudent management, and with moderate and practicable restriction of waste, the Croton watershed, supplemented as now by the Bronx and Byram watersheds, can furnish a safe and ample supply for the boroughs of Manhattan and the Bronx for five years to come; thus giving a short but adequate time in which to build works for an additional supply.

2.—If the public are ready to consent to the complete introduction of domestic meters, and if the administration will earnestly and skilfully undertake the saving of water-waste in schools and public buildings, and will earnestly and skilfully make such investigation of the locality of the present pipe leakage (as is practicable by closing existing gates, and measuring the night flow in various sections by simple means without expensive new appliances), and will then diligently seek and mend the worst of these leaks, at a very moderate total expense, then the safe limit of the present supplies could be extended to ten years hence, with the present rate of growth. [One year is *a very brief* time for the necessary surveys, and five years an almost impossibly short time for building proper aqueducts and dams.]

3.—The preliminary steps should immediately be taken towards the acquisition of an additional supply on a comprehensive scale, capable of supplying 150 million gallons at the start, and of ultimately yielding at least 500 million gallons per 24 hours (preferably 750); and surveys, borings, and river gaugings, with analysis of water samples, by twenty or more field parties over nearly all the grounds covered in the reconnaissance described in the appendices, should be begun "during the present summer"—*i.e.*, of 1900—"so that construction may be begun, if possible, early in the spring of 1901, or not later than 1902." While there is ample proof that more than half of the water now delivered by the New York and Brooklyn aqueducts is wasted, the total *per capita* consumption of water, including waste, in New York and Brooklyn, is to-day smaller than in Boston, Philadelphia, Washington, Chicago, and certain other large American cities; and it appears plain, from reasons given later, that "*the hope of restricting waste does not justify delay in making sure of an adequate additional supply.*"

4.—The work of the Water Department in the location and prevention of waste should be reorganized, and carried on more skilfully and earnestly than heretofore. The city should be divided into districts; and the statistics of average consumption and night consumption, in bulk and *per capita*, obtained and classified. The metered consumption should be better classified, and the whole statistics published annually in such form that comparisons of economy could be easily and intelligently made.

5.—If, from legislative or other causes, there has to be delay in securing a moderate additional supply, "then *a thorough system of waste-prevention*, beginning properly with a meter on every domestic service, *must, of necessity, be begun at once, or danger of a water famine invited.*"

6.—For the proper and reasonable protection of the entire city against fire, and for the greater convenience and economy of the householders, it is earnestly recommended that all new work in supply and distribution of water should tend toward providing a pressure or head of 300 feet above sea level at the city limits (near Yonkers) for any new supply from the north, and, ultimately, a pressure of 100 lbs. to the square inch above the street level at the City Hall; and that requirements for plumbing and all pipe-laying be carried forward with a view to the gradual increase of pressure toward this limit, reaching it (say) fifteen or twenty years hence. Experience in Syracuse proves that such a change of pressure is entirely possible without great disturbance or inconvenience.

7.—I find the price proposed by the Ramapo Company is exorbitant, and that this source, while good in some ways, is less desirable, of smaller capacity, and more expensive, than other sources that can probably be obtained.

Such are the conclusions arrived at more than a year ago by Mr. Freeman; and they are practically endorsed by the recommendations of the Committee appointed by the Merchants' Association, as set out in their report of Aug. 3, 1900, which recommendations, in addition, deal more fully with the political aspects of the question. They are as follows.

1.—No contract whatever should be entered into with the Ramapo Water Company.

2.—The policy of supplying New York City with water by contract should be opposed by all lawful means.

3.—The Legislature should clothe New York City with power to acquire by condemnation any water rights needed for its public water supply, excepting water rights actually used by, or necessary for, the supply of any other city, town, or village.

4.—The constitutional requirement, that the bonds issued by New York City for a water supply shall be included in ascertaining whether the City can become indebted for other municipal purposes, should be removed.

5.—The Comptroller's quarterly and annual reports should contain a clear and businesslike statement of the financial status of the city's investment in its water-works.

6.—A carefully devised system of detailed, accurate, and easily understood public records and reports should be adopted by the Department of Water Supply.

7.—The financing by the city of any addition to its water supply should include the application of the surplus of the revenues over expenditures to the redemption of bonds issued to establish the plant.

8.—*Immediate steps* should be taken by the City of New York to acquire an additional supply of 250 million gallons of water daily from the Adirondack Mountain watershed, by either of the systems proposed in this report.

9.—Immediate steps should be taken by the city officials to prevent the waste of water.

It may be added that both reports recommend the filtration of the present and all future supplies. The reports differ widely as to the source from which the additional supplies should be drawn. Mr. Freeman favours the Housatonic and Ten-Mile Rivers, which have a drainage area of 1020 square miles. They would require a large storage reservoir, and a 36-mile aqueduct. "A daily supply of 350 million gallons from this source could be developed at a cost of $46,600,000 for construction, and $1,917,000 for annual working expenses, interest, and maintenance." This makes no allowance for sinking fund, and is equal to $15 per million, or ¾d. per 1000 gallons of water supplied. The expenditure, however, is only calculated on the basis of filtering 150 out of the 350 millions; this being the quantity mentioned in Mr. Freeman's third "conclusion" as required to be provided immediately. The water would be delivered at the city limits under a head of 300 feet above the sea, without pumping. The Merchants' Association Committee, however, recommend either the Hudson above Poughkeepsie, or the Upper Hudson; either of them being calculated to give easily a supply of 250 million gallons per day. The water from the first would be filtered; and after being pumped up, would flow by gravity through a 60-mile aqueduct to the city, under a final head of 260 feet. In the second case, the water would come unfiltered from the Upper Hudson, or Adirondack watershed, with a drainage area of 518 square miles (as compared with the 11,800 square miles of the Hudson), requiring 203 miles of aqueduct to carry it by gravity from a huge reservoir on the Schroon River to the city, where it would arrive under a head of 310 feet.

The Hudson scheme would cost in outlay $36,880,000; annually, $2,585,000, equal to $28·33 per million, or 1·4d. per 1000 gallons. The Adirondack scheme would require for construction $71,727,000, with an annual cost of $2,727,000, or $30 per million (say, 1½d. per 1000) gallons. All three sources of supply are capable of yielding greatly increased daily quantities, at, of course, a lower cost; it being estimated that were 750 millions per day eventually required, they could be obtained from the Housatonic and Ten-Mile River sources at an average cost, including filtration, of only $11·86 per million, or little more than ½d. per 1000, gallons. None of these estimates includes the cost of distribution, which the Merchant's Committee put at $10 per million, or ½d. per 1000, gallons. The highest estimated cost of additional supplies, excluding distribution, it will be seen, is reckoned at $30 per million gallons; the lowest at (say) $12. The cost of the present supply is $19 per million. The Ramapo contract would have fixed the price at $70. The reason leading the Merchants' Committee to prefer their own to Mr. Freeman's less expensive schemes, was their doubt as to the possibility of overcoming the inter-State difficulties involved in the carrying out of the latter—the lower part of the drainage area of the Housatonic being in Connecticut. The much lower estimated cost of the Housatonic plan should, however, lead to a determined effort being made to overcome these difficulties.

Whatever may be the source of additional supply eventually selected, however, the question of the moment for New York is evidently how to materially reduce the admitted constant waste of water that is going on, "part of which is in the houses, but the larger part of which is underground." It is obvious that, while ample supplies are obtainable in time, no additional source of supply can be made available in the immediate future. Recent events have made it also obvious that the present supply is not equal to providing New York at all times with sufficient water, so long as 50 per cent. and more of that supply is allowed to run to waste through defective taps and unsound mains. Perhaps, though, we should have said that the question of the moment for New York is not so much, or merely, the prevention of water-waste, as that of whether the supply of water to the city in the future is to be provided by those who will protect or by those who will ignore the interests of the citizens. And in New York it is certainly not safe to assume that those who should be the guardians of the city's interests would be if they had their own way. Future events will be watched with much interest.

"Conduit Wiring and Erection" is the title of a little book by Mr. L. M. Waterhouse, Assoc.M.Inst.C.E., Assoc.M.Inst.E.E., which has just been published by Messrs. S. Rentell and Co., of Essex Street, W.C. It has been written with special reference to the "Simplex" system of steel conduits; and the author's aim has been to set forth the best and most economical methods of erection and plans for wiring. The text is fully illustrated.

COAL AND ITS COMBUSTION.

THE question of the conservation of our stores of fuel has been much discussed of late, and in connection therewith the thoughts of many manufacturers have been turned, with renewed interest, to possible means of effecting economy in its use. With cheap coal in abundance, such consideration was unnecessary; and the consequence has been that we have not only employed fuel lavishly, but have done it by means of appliances which have been at once wasteful and a source of atmospheric pollution. The high prices ruling last year caused not a few steam-users and others to seek methods of carrying out reforms in the one direction; and the Coal-Smoke Abatement Society and Sir William Richmond are endeavouring, as we have lately shown, to render our skies less murky than they frequently are. If the evil of which Sir William complains is attributable to extravagant or injudicious use of fuel arising from ignorance of the right method of consuming it, information may be obtained on the subject in a little book which has lately been published by Mr. W. M. Barr.* The object of the writer has been to produce a practical treatise which may be readily, and he ventures to think usefully, consulted by busy men, and especially by engineers and firemen, as well as by all who are interested in securing a more rational method of firing, and a consequent abatement of the smoke nuisance. With the view of meeting the requirements of the class of readers for whom the information contained in the book is primarily intended, the author has adopted the catechetical style, which certainly has the merit of presenting his instruction in a terse and easily assimilable form; and reference is facilitated to any subject by means of an index.

Mr. Barr begins, as he should do, by describing the different kinds of fuel, and then presents some elementary physical and chemical data bearing upon his subject. A knowledge of these is necessary for the right comprehension of what follows. The next chapter deals with the composition of the atmosphere; and then the subject of combustion is taken up. The author shows, in the first place, what combustion is, and how it is supported (a considerable portion of this chapter being devoted to a description of flame); next, the products resulting from the process; and, finally, the quantity of heat developed by it. No treatise on fuel would be complete without some information as to the method of analyzing it, and this is furnished in the next chapter. As fuel is both solid and gaseous, the author has something to say on natural gas, producer gas, water gas, and Siemens gas; and he gives, in tabular form, the heating power of the ordinary gaseous fuels compared with hydrogen. He shows that 351 cubic feet of water gas are required to evaporate 100 lbs. of water at 212° Fahr., whereas 1038 cubic feet of blast-furnace gas are necessary to perform a similar amount of work. The next subject taken up is the heating power of various fuels, and, in connection therewith, calorimetry is explained. Three chapters are devoted to steam generation and stationary and locomotive furnace details, and then the author passes on to the subject of chimneys and mechanical draught. He explains how the area and height of a chimney are determined for a given boiler plant, describes the appliances for producing mechanical draught, and points out the advantagss claimed for it as a means of assisting the utilization of cheap and low-grade fuels. As solid fuels must, of necessity, be stored, they are, of course, liable to spontaneous combustion; and with a few observations on this matter, Mr. Barr brings his "Catechism" to a close. He states that the questions are intended to cover every detail relating to the economic combustion of such fuels as are employed in steam engineering; and he claims that the answers are scientifically accurate. Though they occupy 336 pages, their characteristic feature is conciseness; and, moreover, they are freely illustrated.

*"A Catechism on the Combustion of Coal and the Prevention of Smoke." By William M. Barr, M.E. With 85 illustrations. London: Sampson Low, Marston, and Co.; 1901.

THE GAS AND WATER STOCK MARKET.

(For Stock and Share List, see p. 1460.)

THE week just completed on the Stock Exchange has been strange, if not unique. Preceded by a holiday, curtailed by a holiday, and to be succeeded by holidays, would suffice to render it disjointed and to dislocate business. But on the top of this, came the unique position created by the Committee's decision to keep accounts in a certain stock open beyond the fixed settling time. No doubt it was wise, and it staved off disaster which might have fallen in undeserved quarters. But it produced a feeling of great tension and uneasiness; for no one knew how long it might last or how soon it might come to an end. And when on Thursday the Committee fixed a limit for the suspension of the "buying-in" clause, it was relieving to know something certain at last. The whole business has been very curious, and will probably never occur again. While it was going on, the other markets were almost wholly devoid of feature; and they seemed to be lying still until the clouds rolled by. In the Money Market, too, it was much the same, and the tendency was quiet and steady. Business in the Gas Market was only moderate, but quite as extensive as might fairly be expected at the holiday season. The tendency, too, was

decidedly favourable; for, though only two or three quotations changed at all, they included the two leading issues, and were in the upward direction. In Gaslight stocks, the ordinary opened with a better feeling, and at once improved a point on its quotation. But from that time forward, it did no better, and showed no disposition to advance further. The secured issues were moderately dealt in, but not at rising figures. South Metropolitan from the opening began to recover from the not very reasonable depression it had been subjected to the preceding week, and put on a couple of points. Commercials were lightly dealt in at good middle figures. The Suburban and Provincial group made no sign; and the Continental Companies were very quiet and unchanged. The several undertakings in the remoter world were also devoid of incident. In Water, there were two small changes of quotation in the downward direction.

The daily operations may briefly be summarized: On Monday, Gaslight ordinary and South Metropolitan advanced 1 each. On Tuesday, South Metropolitan rose 1 more. In Water, Kent fell 2, and West Middlesex 2½. On Thursday, Cape Town rose ½. The house was closed on Saturday.

PERSONAL.

Out of the 75 applications for the position of Engineer and Manager of the Windsor Royal Gas Company, in succession to Mr. James Wadeson, who has retired after 45 years' service, Mr. HERBERT BUCKLEY, Assistant Engineer of the Portsea Island Gas Company, has been appointed.

Mr. H. O. TIMMINS, Engineer and Manager of the Tipton (Staffs.) Gas-Works, son of Mr. J. Timmins, of Wigan, has been appointed Gas and Water Engineer to the Newton-in-Makerfield Urban District Council, at a commencing salary of £200 per annum, rising to a maximum of £350.

Mr. J. H. Baldwick, Clerk to the Heywood and Middleton Joint Water Board, has resigned the position consequent on his appointment as Town Clerk of Nelson. The Board have decided to have two Clerks in future—Mr. Bouchier, Mr. Baldwick's successor at Heywood, and Mr. Entwistle, the Town Clerk of Middleton.

Owing to ill-health, Mr. JOHN BIRCH PADDON has retired from the Board of the Malta and Mediterranean Gas Company, Limited; and Mr. ARTHUR MATTHEWS PADDON, M.Inst.C.E., has been temporarily elected to fill the vacancy. Mr. Padden, sen., we believe, still retains his seat on the Court of the Gaslight and Coke Company and his chairmanship of the Brighton Gas Company.

Mr. S. E. HALLIWELL has been appointed by the Directors of the Littleborough Gas Company, Deputy-Manager and Secretary. Mr. Halliwell is a certified teacher of "Gas Manufacture" under the City and Guilds of London Institute, and holds a first-class Honours certificate; he is also a bronze medallist in the Ordinary Grade. Our readers may probably remember that he read an instructive paper on "Examinations in Gas Manufacture" before the Manchester and District Junior Gas Association about a year ago.

OBITUARY.

The death is announced of Major LAMAROCK FLOWER, Sanitary Engineer of the Lea Conservancy Board—a position he had held for some years. He had for about half-a-century been a consistent advocate of the formation of Water Boards for the conservation and supervision of watershed areas; and he spoke on the subject at the meeting, last December, of the British Association of Water-Works Engineers, in connection with the report presented by the Water Board Committee of that body.

We regret to record the death, on the 22nd inst., after only a very short illness, of Mr. J. FREDERICK THEODORE DRORY, Chief Engineer of the Antwerp station of the Imperial Continental Gas Association. Mr. Drory entered the service of the Association at Ghent in 1859, was transferred in 1868 to Lille, and in 1882 to Antwerp as Engineer of the Association's gas-works in that city—a position which he held until his death. Mr. Drory was 61 years of age. He was a member of the Société Technique de l'Industrie du Gaz en France, and a Chevalier of the Order of Leopold. The funeral took place last Saturday in the Kiel Cemetery.

We regret to announce the death of Mr. B. H. PEACOCK, the late Resident Engineer of the Mortlake works of the Australian Gaslight Company, Sydney, New South Wales, which took place at Orange, near that city, on the 16th of April. Mr. Peacock was formerly one of the Assistant-Engineers of the Rochdale station under the Gas Committee of the Manchester Corporation. He left England in January, 1883, to take up a similar position in Sydney, under the Australian Gaslight Company; and during his 18 years' residence there, he was actively engaged in the development of the Mortlake station. In August last, Mr. Peacock showed signs of failing health; and under medical advice, he took a sea voyage to Japan. On his return, finding the change had not proved beneficial to him, he visited Orange, where, after much suffering, borne with great fortitude, he passed peacefully away—the cause of death being heart disease. Mr. Peacock, who was only 43 years of age, leaves a widow, but no family.

NOTES.

Lightning-Rods.

Mr. Alfred Hands, Fellow of the Royal Meteorological Society, has discoursed before the Architectural Association on the subject of lightning-rods. This is a study which seems to get more difficult every year, as more is learned of the vagaries of lightning discharges. It now appears settled that the use of copper for lightning conductors is to be commended, although Dr. Lodge said some time ago that iron was equally good. The practical point is that copper lasts longer in a smoky atmosphere. Gas and water pipes forming a metallic network inside a building, ought to have a good line of conduction to the ground, as they usually have, through the mains. All metal outside a building—such as leaden gutters, rain-water pipes, &c.—should be connected to the lightning-conductor. There is risk of lightning striking sideways from an outside conductor to inside gas and water pipes, through the wall, if the distance is less than 4 feet, and at a greater distance if the conductor should happen to be imperfectly earthed.

The Failure of Calcium Carbide.

A criticism of calcium carbide and its uses has appeared in "Engineering." Notwithstanding the energetic attempts that have been made on all sides to push acetylene lighting, the market for carbide has gone to pieces. Prices have fallen by one-half during the past year, and many Continental works that had been started for its production are closed. It is remarked by "Engineering" that commercial calcium carbide is not yet ten years old. It is said to be manufactured in half-a-hundred works, which have satisfactorily solved the problems of its production; "and if we only knew what to do with it, it might still be regarded as a most promising child." Practically, however, it is only used to produce acetylene, which dazzles more than it pleases. Other applications for the carbide are needed, if it is to be worth making. It is, for one thing, a powerful reducing agent, and its metallurgical properties have been investigated by several experimenters, who do not seem to have achieved much sterling success in this line. These researches demonstrate that calcium carbide can afford some help to the chemist and assayer, and also to the metallurgist in refining operations. But nothing of practical value has yet emerged from such investigations; and meanwhile there is more calcium carbide made than is actually needed for any purpose.

A Handsome Water-Tower of Angle-Iron.

As an example of how a beautiful effect can sometimes be achieved incidentally to cheapness and simplicity in engineering construction, the accompanying diagrammatic illustration of a water-tower will be hard to beat. It is given in the "Zeitschrift" of the German Engineers' Society, and represents an elevated tank which was built in the grounds of the Pan-Russian Exhibition at Nijni-Novgorod, by the firm of Barry and Co., of Moscow. The sketch explains itself. The only peculiarity of the structure is in the tower, which has the shape of a hyperboloid, and can therefore be built of straight members. It is the form taken by a bundle of straight rods, loosely tied round a line rather above the middle, and twisted round their common axis so as to stand firmly on one end. As made, the tower is one ring of such rods. It is composed of merchant angle-bars, about 2½ inches on each face, bolted together at the intersections. The material was delivered on the site as it came from the rolling mills, without any shop work whatever having been done upon it. All the designing and putting together was accomplished upon the spot, without any trouble, under the superintendence of Mr. Shukow, the Engineer of the work.

Some Points of the French Chemical Industry.

Some particulars are to hand respecting the French chemical industry. In regard to the manufacture of sulphate of ammonia, it is stated that one of the native sources of this product has been certain waste liquid products of industrial operations, and sewage, which are no longer available in such large quantities owing to the prevalence of the practice of turning all such matters into the sewers to be otherwise disposed of. In the neighbourhood of Paris, these matters used to yield 5800 tons of sulphate of ammonia annually. All the largest French gas-works now make their own sulphate; the total output aggregating about 15,500 tons annually. A good deal of sulphate has been made since 1898 in connection with the coking industry, which has followed the example of Germany in this respect, and now produces 6000 tons of sulphate annually. Still, the great bulk of the sulphate used for manure in France comes from England. The maximum importation was in 1897, when 23,116 tons were taken. In 1899, the importation fell to about 10,000 tons. The balance (a nearly equal amount) came from Germany. Curiously enough, notwithstanding this importation, a small quantity of sulphate is exported from France. This seems to be an uncertain quantity—amounting in 1899 to 1000 tons—and probably goes to French colonies. Liquid ammonia seems also to be made at the largest

French gas-works. It is noted, with respect to the industrial production of oxygen in France, that there are only two works in the country where this gas is prepared for sale, and that so far no industrial applications for it on a large scale have been discovered.

Coke for Heating Hot-Houses on the Large Scale.

A very great deal of the agricultural land in the suburbs of large English towns is now covered with glasshouses, in which, by the heat of coke-fired boilers, an immense quantity of fine garden produce is grown for the market. The owners of these forcing-grounds are among the best customers of gas companies. Gas managers are therefore likely to be interested in the inquiry of a "Puzzled Nurseryman," recently addressed to the Editor of "Engineering," as to the way in which the fuel used for greenhouse heating on the large scale can best be economized. The writer complains that the high prices of fuels have made inroads into profits which are at no time large, owing to the great competition in this industry. He wants to know whether it would be better to try getting up steam in one or two boilers, for ultimate heating of masses of circulating water, instead of heating the water direct in boilers of the kind usually employed for greenhouse use. Our contemporary very properly replied that the office of either steam or water in such a connection is merely that of carrying the heat from the furnace to the places required to be warmed. Wherever the demand for heat, we may add, exceeds that of a quarter-of-an-acre of glass houses, it is advisable to abandon the use of the ordinary horticultural type of boiler, which is very wasteful of fuel, and adopt the Cornish type of boiler, with coke-fired furnace, which will prove much more economical and satisfactory in every way. Heating on this scale requires regular stoking, night and day.

The Commercial Analysis of Coke.

Mr. R. Buchanan, writing in "Engineering" on the subject of the usefulness of chemical analysis as an aid to foundry work, mentions, among other things, the expediency of occasionally analyzing coke. These remarks applied in the first place to hard coke; but they are of general applicability. An instance was given of a highly recommended sample of coke, offered at a low price. The content of carbon was stated to be over 95 per cent.; ash, 3·42 per cent.; and sulphur, 0·658 per cent. A truck-load was purchased, and a sample analyzed, with the following result: Carbon, 88·729 per cent.; ash, 8·984 per cent.; and sulphur, 1·507 per cent. A few charges were tried in the cupola; using an equal weight of the cheap coke with that of the dearer supply ordinarily used. The result was that the iron ran dull, and was hard in addition—the hardness being due to the very high sulphur of the coke. The remark is made upon this, that there is no profit in buying a cheap coke, if the purchaser gets ash, and especially sulphur, as an offset to the low price. It is carbon that the foundryman wants and must have; and if an extra weight of coke has to be charged in the cupola in order to get that carbon, excess sulphur and ash are also being charged. Thus the buyer pays as dearly for the heat-giving element (carbon), the cupola gets stopped with slag, the metal runs dull, and the castings are hard. Hence there is no profit in buying a cheap coke that is not also really good. It would be interesting to know how many gas undertakings have the coke resulting from different coals regularly analyzed.

An Electrically-Driven Cotton Mill.

In view of the slow progress that has hitherto been recorded in respect of the adoption of electric power transmission in British mills and factories, it is interesting to note the circumstances under which this method of applying power in a cotton spinning mill has been carried out by the firm of W. B. Smith-Whaley and Co., of Columbia, South Carolina. It appears from particulars published in the "Engineering Record," that about four years ago there were two mills, each of about 12,000 spindles, built at Columbia by this firm. One of these had the usual belting and steam power; while the other was worked by electric power transmitted from a distant source. At the time, the electric power mill was looked upon as somewhat of a luxury; but during the period that has elapsed since their construction, it is stated that the repairs in the case of this mill have only been one-half as costly as those of the steam mill, while the output has been 4 per cent. larger. The latter consideration was esteemed so highly that when the question arose of the establishment of a much larger mill at the same place, it was decided to drive the machines electrically from steam plant on the spot. The building was designed for the usual shafting and belting; but when contracts were offered on the two systems, it was found that the electric was the cheaper, owing to 61 per cent. of shafting being saved. Another 66 per cent. was saved on the belting; and 10 per cent. was saved on the building of the heavy cross-walls that would have been required to carry the main shafting. These economies went to pay the cost of the electrical equipment. The power required for the mill amounts to about 3600 indicated horse power; and the distribution does not go below 150-horse power motors, which are connected up to line-shafting. There is still, therefore, a good deal of shafting and belting in the mill. The construction of the mill cost about $18\frac{1}{2}$ per spindle in the gross; but after making certain allowances for works not properly chargeable to the mill itself, it is stated that the capital cost compares favourably with that of ordinary New England mills.

TECHNICAL RECORD.

INCORPORATED GAS INSTITUTE.

The Programme for the Forthcoming Annual Meeting.

As has been already announced in the "JOURNAL," the annual meeting of the Gas Institute will be held on the 11th, 12th, and 13th prox., at the Royal United Service Institution, Whitehall, S.W., under the presidency of Mr. T. Ormiston Paterson, M.Inst.C.E., of Birkenhead. We learn from the programme which has been sent to the members by the Secretary (Mr. Walter T. Dunn) that the usual business transacted on the first day will include a resolution fittingly testifying to the participation by the Institute in the national sorrow at the decease of Her late Majesty, expressing their respectful sympathy with her successor and the other members of the Royal Family in their bereavement, and offering to His Majesty King Edward VII. their loyal congratulations on his accession to the Throne. The passing of this resolution will be followed by the election of officers, the admission of new members, and the presentation of the annual report of the Council, with the accounts, and the premiums for papers read last year.

In their report, the Council state that at the end of 1900 there were 683 names on the register, distributed as follows: Honorary members, 19; ordinary members, 524; extraordinary members, 30; associate members, 56; associates, 54—an increase of one in the total membership. The additions made to the roll as the result of the election at the last annual meeting consisted of nineteen members and five associate members; while there were four associate members transferred to the class of member. Thirteen resignations and removals of names are recorded; and there were seven deaths—Mr. J. Brooks (Derby), Mr. G. Donaldson (Waterford), Mr. S. Jones (Pernambuco), Mr. D. H. Lloyd (Newton-in-Makerfield), Dr. Stevenson Macadam (Edinburgh), Mr. J. Read (Tunbridge Wells), and Mr. T. Vasey (Melbourne). Dr. Macadam was an honorary member, having been elected, in recognition of his scientific attainments, at the meeting of the Institute in Edinburgh in 1873. Reference is made to the successful meetings in Paris last year, and to the International Engineering Congress to be held in Glasgow in September. The premiums for papers have been awarded as follows: First (with the President's Medal), to Mr. W. R. Chester, for his paper on "Automatic Stoking and Inclined Retorts;" second, to Mr. W. Young, for his paper on "Naphthalene;" third, to Mr. A. T. Walmisley, for his paper on "Retort-House Roofs." With regard to the accounts, they show that the financial condition of the Institute is satisfactory. A balance of £85 is carried to the profit and loss account; bringing up the total to £1595.

After these matters have been disposed of, the President will deliver his Inaugural Address, which will be followed by a report by the Council on the amalgamation negotiations. The technical business will then be taken. Its nature is indicated below. There will be a meeting of the donors and subscribers to the Benevolent Fund at the close of the morning sitting; but with this exception the members will be free for the rest of the day.

On the second day there will be a morning sitting only (unless an extension is found to be necessary), and it will be devoted to a lecture on "The New Table Photometer and Pentane Ten-Candle Lamp," by Dr. Frank Clowes, the Chemist and Superintending Gas Examiner to the London County Council. The apparatus lately prescribed for use by the Gas Referees will be shown in action, and will be fully described by diagrams. The lecturer will refer to the experience obtained by its use; and members will be afforded an opportunity of making tests for themselves. On the third day, a resolution will be submitted expressing the Institute's approval of the action taken by the North British Association of Gas Managers on the subject of interchangeable meter-unions, the remaining technical matters will be disposed of, and the usual closing business transacted. On Friday, the 14th, there will be a steamer excursion to Herne Bay, which will bring the meeting to a close.

The following are the papers upon the programme: "The Effect of Quality and Pressure of Gas on the Efficiency of Incandescent Gas Lighting, having Regard to Economy," by Mr. W. Grafton, of Beckton; "Why I Adopted Water Gas," by Mr. W. Langford, of Longton; "Self-Intensifying of Gas Pressure by Means of Waste Heat," by Mr. C. Scott-Snell, of London; and "High and Low Pressure Gas Incandescent Lighting," by Mr. W. Sugg, of London. Mr. R. Porter, of Elland, has promised a paper, but its subject is not stated.

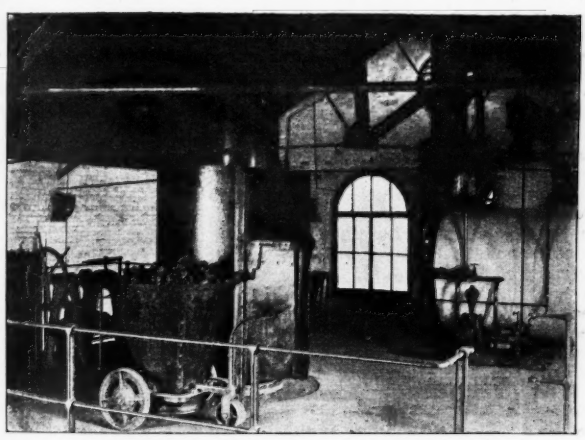
MIDLAND ASSOCIATION OF GAS MANAGERS.

Spring Meeting at West Bromwich.

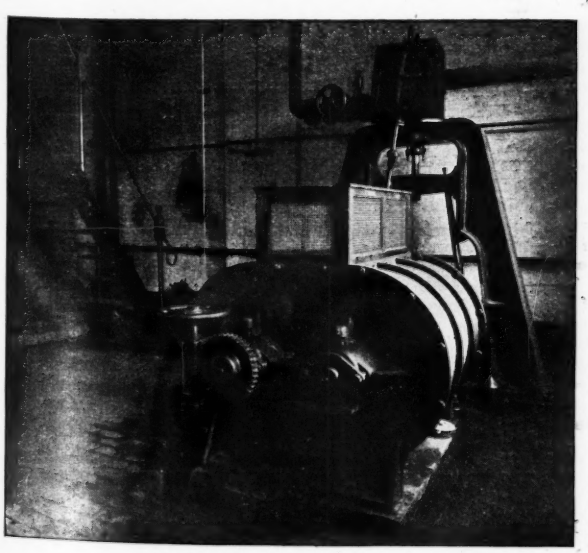
The President of the Association (Mr. Thomas Glover), in his Inaugural Address delivered last February, indicated some of the improvements he has been engaged in carrying out at West Bromwich since he took charge of the works, now some six or seven years ago; and this, coupled with the well-known fact that the

first Dellwik-Fleischer water-gas plant to be erected in England has recently been installed and started at his works, led an unusually large number of members to accept the invitation to attend the spring excursion meeting to West Bromwich last Thursday, though, in accordance with the general rule, it was not intended to have any paper read or formal business transacted. An opportunity was however found before the members all separated for proposing the election as a member of the Association of Mr. T. R. Collins, of Stony Stratford.

GENERATOR—GROUND FLOOR.



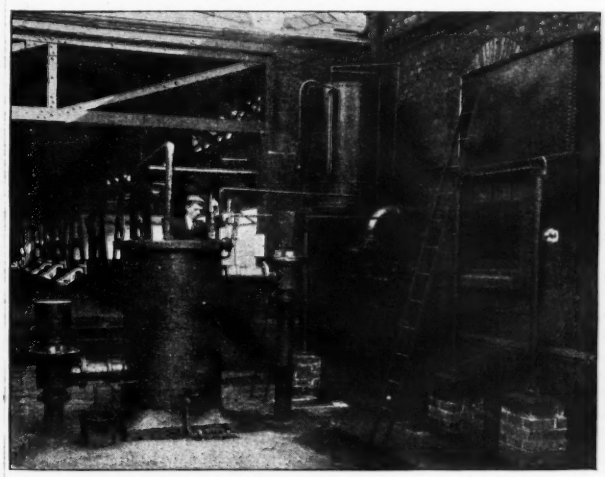
GENERATOR STAGE FLOOR, SHOWING BOILER.



ROOTS PRESSURE BLOWER.

The weather was fortunately fine; and the arrangements for the day carried out by Mr. Glover proved most attractive, while the Chairman of the Gas Committee (Mr. Councillor C. D. T. Bushell) was a kindly and genial host. Well-equipped conveyances were waiting at the different stations near West Bromwich at which members would arrive; and shortly before mid-day, sixty or seventy members, with a few friends, were welcomed at the Albion Gas-Works by Mr. Glover, Mr. Bushell, and the Mayor (Mr. Councillor J. H. Chesshire). An inspection of the gas-works was at once undertaken; and to furnish the necessary information regarding the plant on view, Mr. Glover had specially prepared a very excellently printed account of the works under his control, from which we extract the following particulars.

The works were constructed to the designs, and under the superintendence, of the late Mr. G. W. Stevenson; and gas making was commenced on June 27, 1880. The area of land originally acquired was 5 acres; while subsequent purchases have made the total land available nearly 7 acres. The largest daily make of gas in 1880 was 731,000 cubic feet; while in 1900 it was 1,486,000 cubic feet. The annual make of gas was, in 1880-1881, 148,500,000 feet; in 1890-1891, 201,300,000 feet, or 35·5 per cent. increase; and in 1900-1901, 327,400,000 feet, or 62·6 per cent. increase. The capital expenditure in 1882 was £150,103, or £9 7s. 6d. per ton of coal; while in 1900 it was £203,868, or £7 0s. 3d. per ton of coal. There are 5250 prepayment consumers on the books, who use 48 million cubic feet of gas per annum. Gas-engines, with an aggregate of about 1500 indicated horse power, consume 25 million cubic feet, or 8 per cent. of the total sales. The retort-house is 231 feet long by 70 feet wide, and contains 284 mouthpieces. Its maximum working capacity is 2 million cubic feet per day. The whole of the retorts are heated on the gaseous-fired principle, with regenerators, except in four sets, where a simpler method of heating the secondary air has been found to work satisfactorily. The first set of coal-breakers, elevators, and conveyors, with West's charging and drawing machines, were installed in November, 1895, and have been in constant work since that date. An extension of No. 1 retort-bench in 1899, necessitated the erection of a second set of coal-breakers, elevators, and hoppers. These breakers, made by West's Gas Improvement Company, are of a



CARBURETTORS, SHOWING SIGHT-FEED FOR BENZOL.

powerful type, and capable of dealing with the largest and hardest varieties of coals. Gas-engines are in use for driving this installation, and have been found quite suitable for the work.

There is a square cooling main of large area round the retort-house, with occasional drain pipes for removing the tar and liquor. The condensers are of the vertical annular type, and are about to be supplemented by an additional set of the water-cooled type. Owing to the exposed position of the existing condensers, it is impossible to control the temperature at the outlet during the prevalence of extreme weather. The steam-boilers are fitted with forced-draught furnaces; and coke screenings are used as fuel. The original sets of reciprocating exhausters have recently been supplemented by the addition of a rotary exhauster, with vertical engine, having a capacity of 100,000 cubic feet per hour, made by Messrs. Bryan Donkin and Clench. A Livesey washer and two "Standard" scrubbers have proved very efficient plant for the removal of tar and ammonia. The gas is quite free from the latter impurity at the outlet of the finishing scrubber. The fresh water, added at the terminal end of the finishing scrubber, is measured, and is proportioned to the varying volume of gas passing through the apparatus. There are eight purifying boxes, each 25 feet square by 5 feet deep. The last two boxes are used as catch purifiers. The two sets of four each can be worked either in series or separately with two streams of gas. Hydraulic power is used for lifting the covers. There are two station meters, each of 60,000 cubic feet capacity. Under the same roof accommodation has been provided for a foreman's office, workmen's mess-room, lavatory, and bath. Carburetting with benzol has been in use for eighteen months. This method of controlling the candle power has been found both convenient and economical. A very powerful carburettor, made locally to Mr. Glover's own designs, can be used to volatilize oils suitable for dissolving naphthalene deposits or preventing their formation (under Young and Glover's patents), or to volatilize a larger quantity of benzol when water gas is being mixed with the coal gas.

The water-gas plant is of the Dellwik type. In devising this form of apparatus, Mr. Dellwik has succeeded in so operating

the "blow" that only trifling quantities of carbonic oxide escape with the waste products. This is attained by the use of a powerful and positive blast, obtained from a Roots blower, and by using a comparatively shallow bed of fuel. A greater amount of heat is thus stored up in the generator, and a much longer "run" becomes practicable than is the case with the Lowe type of plant. Other advantages which may be apparent are: The reduced consumption of coke for the gas made, reduced capital outlay, and small ground space covered. The short time occupied in blowing, and the long run which follows, allow the use of a small relief holder. The one utilized in this instance was intended for a coal-testing plant, and may still be used for that purpose. The plain water gas is measured, and then mixed with the coal gas in the foul mains over the retort-benches. After purification, the illuminating power of the mixed gas is raised to the required standard by means of benzol.

The gasholders have a total capacity of 1,600,000 cubic feet. The two governors are provided with Parkinson's water-loading attachments, and the pressure-registers with electrical alarms to give warning of any abnormal increase or decrease of pressure which may occur. The laboratory is fitted with all modern appliances for testing the raw materials and residuals, as well as the heating and illuminating power of the gas. The show-rooms and stores are situated in the central portion of the town, for the convenience of the outdoor staff, and to give facilities to consumers desiring to inspect stoves and fittings.

Needless to say, the visitors devoted most attention to the Dellwik-Fleischer water-gas plant, the construction and working of which were well described on the spot by Mr. Carl Dellwik and his Assistant. The benzol carburettors also came in for a large share of notice; and the admirable working results from the use of this simple arrangement were much commented upon. On returning to the offices, light refreshments were served, and an opportunity was afforded to Mr. R. O. Paterson to propose a vote of thanks to the Mayor and Corporation for allowing the members to inspect the works, and for their arrangements for the comfort of the party during the day. Mr. Paterson did not forget also to congratulate the Corporation on having secured the services of so able and energetic a man as Mr. Glover to direct the operations of the Gas Department. Mr. W. R. Cooper seconded the resolution, which was carried unanimously. Mr. Bushell replied, and said they felt honoured that their Manager had been appointed President of the Association. They were satisfied that in Mr. Glover they had a man of acknowledged ability who was thoroughly up-to-date in his work.

A very pleasant drive through the town and surrounding districts was then undertaken; and a halt was made to visit the Old Oak House—a timber structure in the centre of the town, which was purchased and restored by the late Chairman of the Gas Committee (Mr. Alderman Fairley), and subsequently presented to the citizens, by whom it is used as a general museum of most interesting curiosities. The drive was resumed through Dartmouth Park to Mr. Bushell's private house, Broom Hill, where a sumptuous dinner was served, to which the members had been invited, as well as the Gas Committee, the Secretary (Mr. Thomas Hudson), and some few of the town officials. The toast list was commendably short, as, beyond "The King and Royal Family," three toasts only were given: "Prosperity to the Town of West Bromwich," proposed by Mr. J. Hepworth, and responded to by the Mayor; "The Midland Association of Gas Managers," coupled with the name of the President; and "Our Host, Mr. Bushell," proposed by Mr. Charles Hunt. Having, after dinner, strolled through the lovely grounds surrounding the house, the party separated with every pleasurable recollection of their interesting and instructive visit to West Bromwich.

THE KITSON LIGHT—REMARKABLE OFFERS AND STATEMENTS.

The warmth of the attentions of the electricians to the Borough of St. Marylebone and the enthusiasm of the local electricity fanciers endow with more than ordinary interest an installation which the Kitson Lighting and Heating Syndicate have made of their high-power oil incandescent street-lamp system right in the midst of this particular district, and in one of its most important localities—Portland Place. The curious point about it is that the installation has been put down at the request of the Borough Council; and, in doing this, it seems to us they have brought into the full view of the ratepayers a splendid argument against a continuance of their own fluttering around the electric light. The Council have made a provisional agreement with the Metropolitan Electric Supply Company for the purchase of the portion of the undertaking situated in St. Marylebone, and have also an Electric Lighting Provisional Order speeding its way through Parliament. But the Kitson incandescent oil-lamps have stepped in; and now nightly, with powerful eloquence, they are appealing to the Local Authority to stay their proceedings in the matter of electricity. At the same time, the lamps are giving the ratepayers proof of their great virtue as light-giving agents; and the Kitson Syndicate have taken care that the ratepayers—and the whole of London too—shall know precisely what is the cost, in comparison with electricity. The figures that they have put forth stand as a challenge to the Local Authorities of London; and they must command attention. No member of a local authority who has a true perception of his duty can now neglect, in connection with the lighting of the streets of his district, to give due and fair consideration to the claims of this light, and those of the intensified gas systems, before deciding to launch out into prodigal expense for the purpose of attaining a less effective result by means of electricity.

The Portland Place installation consists of twelve lamps, placed on the refuges. Each lamp has an illuminating value of 1000 candles; so that the twelve shed a total light equal to 12,000 candles. They have (and this is the unfortunate part of it, but better the Kitson lamp than electricity) displaced 54 gas-lamps in the main thoroughfares, and possibly 24 lamps in side streets—together 78 lamps. But these lamps were fitted with the old flat-flame burners; so that the statement that these supplanted lamps only gave a light of 1170 candles has no real value for purposes of comparison. But the assertion that the Kitson lamps would save the Council and the ratepayers some £25 per annum, and yet give them ten times more light than they had before under the old order of things, will assuredly cause them to ruminate a bit before increasing their public lighting expenses by electricity. We are further informed that, for an initial outlay of approximately £50,000, the Syndicate could light the whole borough; and the annual upkeep would not be more than £14,000. How would this compare with electricity for an equal illumination? In addition to the Portland Place installation, there are four standards outside the Hotel Great Central (in Marylebone Road), each carrying three lanterns containing two burners.

Last Wednesday evening, there was an inspection of the installations; and in connection with this event, there was a dinner at the hotel just mentioned. With the dinner we have nothing to do; but in the after speeches, there were two or three points which are worth noting. One of the speakers was Professor Vivian B. Lewes, whose interesting report on the Kitson light (prepared in conjunction with Dr. Boverton Redwood) we published on Feb. 5 last. Those who have seen the light must, remarked the Professor on Wednesday, feel that "we have really come to a point at which we have reached a most important era in the history of our lighting. . . . You have now the possibility of getting a light of a full thousand candles illuminating power at 1d. per hour, which I would have looked upon a year ago as almost an impossibility. That light has one other advantage which makes it almost unique. When you look upon the flood of white light, which enables you to read at any part of Portland Place, you will do so without any feelings of resentment that are conjured up by other systems of illumination." There is only one other speaker whom we need notice, and that is the inventor of the system, Mr. Arthur Kitson. Some of the figures already quoted were drawn from his remarks; and a few others may be cited, in order to put readers in possession of them, as they really constitute a direct challenge to local authorities. He states that Kensington has recently entered into a contract for the lighting by forty electric arc lamps of 1½ miles of streets, at a cost for the first year of £3900. By his own system, he declares that he could light the same thoroughfares more brilliantly than the electric light people propose to do, at an annual cost of £900—thus saving to the borough of Kensington £3000 on only 1½ miles of streets. "We are willing to undertake this contract," said Mr. Kitson. But then he soared higher than that, and said: "We will undertake to light the whole City of London for a quarter of the money that has been spent on electric lighting. You have to-day in London something like 2000 miles of streets, which are very improperly lighted. You have had something like 2 millions of money invested in electric lighting during the last few years; and yet only a small proportion of the streets have been lighted electrically. Now for an investment of a quarter of the amount, we could have lighted those streets so that you could have read a newspaper in any part of them. All we ask for is a proper and scientific investigation of the system we are advocating." These are not mere vapourings; but the cool, deliberate offers of a man of business. Where is the local authority who will be the first to put the statements to the proof on a large scale?

There are a few more words in Mr. Kitson's remarks which are of interest, as they show how greatly he recognizes that his invention would have been futile without the aid of the invention of Dr. Auer von Welsbach. He said: "I first discovered the light in 1886 with the platinum mantle. I found it could not be used practically; and I had to put the invention on one side until the Welsbach mantle was invented. Until the Welsbach system was possible, our system was impossible."

STEEL GASHOLDER CONSTRUCTION.

In a recent number of the "Wisconsin Engineer," Mr. W. A. Baehr, of Denver (Col.), offered a few observations on the above subject as a "suggestion for a thesis in structural engineering." He explained that he had always entertained the hope that the American universities would some day add "Gas Engineering" to the list of subjects for which courses of studies were arranged; and he was desirous of seeing Wisconsin take the lead. In view of the possibility of this being done, he indicated a few of the problems connected with one branch of the general question.

The study of gasholders in connection with other structural

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engineering problems is one that is largely neglected in our engineering schools and universities; yet it is one whose importance is increasing very rapidly of late, as a natural result of the more universal application of gas as a source of light, heat, and power. This increased demand for gas has necessitated larger storage capacity; and holders are now built of such magnitude as would appal the engineers of fifty years ago.

In general, the cost of a steel gasholder per unit of capacity decreases as the size of the holder increases. The first question, then, to present itself is, "What is the limit of size of gasholders in view of our present knowledge of the properties of structural steel, considering the point where economy ceases?" In other words, shall we build one holder of (say) 12 million cubic feet capacity, or two of 6 million cubic feet each, or three of 4 million cubic feet each—assuming, of course, that the business justifies such an amount of storage.

The study of the design of steel gasholders naturally divides itself into four parts—viz., the foundation, the tank, the holder, and the guide-framing. Each of these subjects presents a field for investigation fully as rich in research as the design of the steel work for a high building or of a large bridge. There are, of course, other kinds of gasholders besides those built entirely of steel with guide-framing, such as those with tanks of masonry or cast iron, combination tanks of steel and concrete, holders without guide-framing or with peculiar forms of guiding, and those whose framing does not extend to the top of the holder when full.

The foundation presents numerous problems, and some of these contain conditions which the engineer may never solve to his entire satisfaction. In the first place, the ground must be tested thoroughly, borings made to determine the character of the soil, and its stratifications, due weight being given to surrounding conditions, such as proximity of railroad tracks, where passing trains might induce vibrations, or possibly the chance of damaging other important structures near would introduce factors of a complex nature. If piles are deemed necessary, they should, if possible, be driven below the level of the ground water, in order to preserve them. In this connection, the question of the number of piles required, their arrangement, bearing power, and kind, constitutes an important item. A proper arrangement for admitting the inlet and outlet pipes is very important.

A bed of concrete for the tank to rest upon may be placed over the top of the piles, or if these are omitted, and the character of the soil permits, the concrete may be laid directly upon the ground when properly excavated. Here the question of depth of concrete bed necessary is probably the most vexatious, for it is difficult to find suitable precedents. Then the composition of the concrete and the kind of cement to use must be determined. There is no doubt that good portland cement is by far the best kind to use in a climate where the winters are at all severe. This is particularly true where the foundation must stand over a winter before the tank is placed upon it. In finishing the surface of the concrete, it should be borne in mind that this must be as nearly level as possible, because, if it is not so the guide-framing and holder will be thrown out of plumb, and its working impaired. In all calculations respecting piling and concreting, it is necessary, of course, to calculate the superimposed load very carefully, and to distribute the piles in such a manner as to best resist the various forces acting upon them.

The proper design of a steel tank of the size required in gasholder work involves many fine problems. The great amount of water contained produces heavy stresses, which, however, can be calculated very nicely. In order to show the amount of these stresses, it can be demonstrated that in a tank 184 feet in diameter by 34 feet deep, the side plates of which are arranged in seven courses, with an allowable unit stress of 13,500 lbs. per square inch, the bottom course of side plates should be $1\frac{1}{4}$ inches thick. This tank would be suitable for a four-lift holder of 3 million cubic feet capacity.

When steel shapes or plates as thick as $1\frac{1}{4}$ inches are employed, a great many conditions enter into the design which do not occur in thin metal. This particular plate would require $1\frac{1}{4}$-inch rivets; and that would mean that holes for these rivets could not be punched. In fact, in first-class tank construction, holes in plates more than $\frac{1}{2}$ inch in thickness should be drilled. Another important feature is that all such work should be carefully laid out and fitted in the shop, in order to go together neat and tight in the field. Field work on heavy material is very expensive.

The vertical joints in the tank-shell should be designed for a maximum efficiency. One of the best-known forms is a double strap butt joint, with the riveting so arranged that the efficiency varies from about 91 to 94 per cent. Horizontal joints may be single riveted lap joints.

The tank bottom may be built of rectangular or radial shaped plates, and the thickness is arbitrary. When on a good foundation, $\frac{1}{4}$ to $\frac{3}{8}$ inch is sufficient. All joints must be well caulked, and pneumatic caulking is preferable. How shall a tank bottom be lowered on to its foundation after being riveted and caulked? There is something to think over here. A good standard grade of medium steel, well tested, ought to be selected for this work.

In the holder or gas-containing part, the chief points to be dwelt upon are as follows: Shall the crown be trussed or untrussed? How shall the upper curb, goose-necks, and cups be designed? What is the most economical radius for the crown? Other important points are the design of radial and tangential rollers, the weights of the crown and side sheeting required, the best method of securing a gas-tight joint in the plating, the size and spacing of rivets employed, and proper stiffeners for each lift.

Of course, the whole detail depends largely upon the proportionate design of the entire structure. What is the most economical and safest relation of the diameter to the height of a holder? In the answer to this question, there are the most complex factors. A wind load amounting to possibly 50 lbs. per square foot, and a snow load of perhaps 6 inches distributed over the whole area of the crown or massed entirely on one side, must be taken into consideration. The guide-framing, of course, is designed to transmit the stresses due to the various loads into the tank-shell. As generally constructed now, they are a number of posts built up of various standard shapes, such as **I**-beams, channels, angles, and plates, connected by a system of horizontal struts and diagonal braces. The economical distribution of material in the posts so as to best resist the various stresses is a great study by itself, when one takes into consideration the standard shapes readily obtainable in the market. Shall rods or angles be employed for the diagonal bracing? The trend of opinion seems to favour the stiff bracing. Shall these connect to the front or back chord of the posts? The answer is that the bracing shall lie in the plane through which the stress would be transmitted from one post to the other. Can such a design be made?

In general, when one finds that a steel gasholder of 3 million cubic feet capacity contains some 1800 tons of steel, the magnitude of such a structure can be better appreciated.

The Albert Medal of the Society of Arts has been awarded by the Council this year to His Majesty the King, who has graciously consented to accept it. The grounds of the award are principally the services the King has rendered to the Society, and through it to the arts, manufactures, and commerce of the country, by occupying the position of President for 38 years; but reference is also made to the active interest he has long taken in international exhibitions, and the actual work he did as President of the British Commission for several foreign exhibitions, and also as President of the series of exhibitions held at South Kensington.

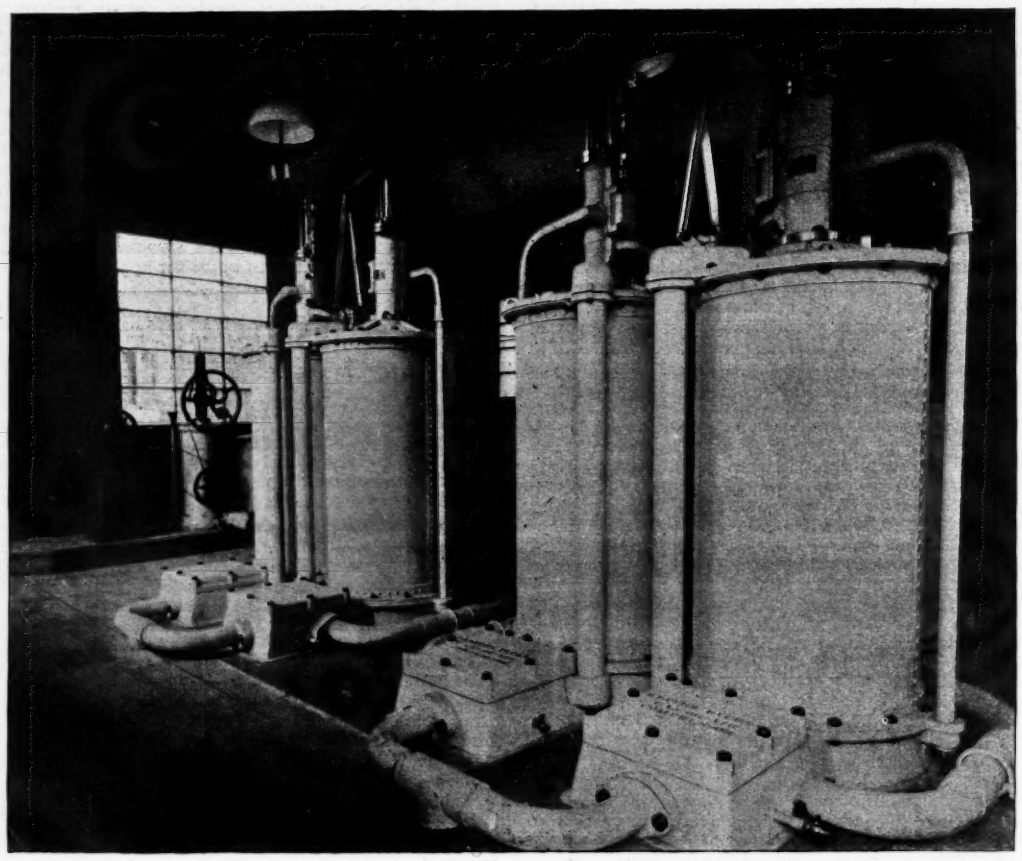
Mr. Edwin Smith and the Birmingham Gas Committee.—As a tangible manifestation of the esteem in which Mr. Edwin Smith, the retired Secretary of the Birmingham Gas Department, is held by the Gas Committee, he will shortly be presented with a handsome token, in the shape of a silver rose cup, with an engrossed and bound copy of the resolution passed by the Committee on his retirement. The cup is about 15 inches high and 10 inches in diameter. It is made of hammered silver, and is a very beautiful object. The following inscription is upon it: "To Edwin Smith, on his retirement from the Secretaryship of the Gas Department, Birmingham, from the Members of the Committee. March, 1901;" and at the foot are engraved the names of all the members. The accompanying volume contains the resolution. We are pleased to learn that Mr. Smith's health has improved of late. It is hoped that the presentation may be made in the course of the next fortnight.

Society of Engineers.—We have received the volume of "Transactions" of the Society for the past year. It contains a record of good work done under the presidency of Mr. Henry O'Connor, of Edinburgh, whose interesting Inaugural Address was given in the "JOURNAL" at the time of its delivery. The paper by Dr. G. Sims Woodhead and Mr. W. J. Ware, on the "Disinfection of the Maidstone Water Service-Mains," and one by Mr. H. C. H. Shenton, on "Recent Practice in Sewage Disposal," are of special value to our readers. The author of the latter was awarded for it the President's gold medal. Accounts are given of the Society's vacation visits; and the "Obituary" includes notices of M. Jordan—Engineer of the Marseilles Gas-Works, and one of the founders of the Société Technique du Gaz en France—and Dr. William Pole, F.R.S. A plate showing the President's badge of office, presented to the Society by the Honorary Secretary and Treasurer (Mr. George Burt), forms a frontispiece to the volume, which has been produced under the editorship of Mr. Perry F. Nursey, the Secretary.

The Late Sir Courtenay Boyle.—In the course of a long appreciative notice on Tuesday of the work of the late Sir Courtenay Boyle, K.C.B., Permanent Secretary to the Board of Trade, whose sudden death on the 19th inst. was recorded last week, "The Times" said: "On appointment as permanent head of his department, he succeeded to a post the duties of which, sufficiently varied and responsible then, have steadily increased since. Railways, tramways, and canals, the affairs of shipping, seamen and lighthouses, fisheries and harbours, the Patent Acts, gas and water companies, copyright, commercial questions, statistics, and standard weights and measures form a sufficiently diversified list. But to these have been added the supervision of bankruptcies and liquidations, the study of, and sometimes interference in, labour questions, and the rapidly-increasing work connected with the practical application of electricity in all its branches. Into all these subjects Sir Courtenay Boyle threw himself with characteristic vigour of thought and action; and it is no disparagement either to his chiefs or to his subordinates to say that on each of these subjects he was the soul of the Board of Trade. He had a thorough grasp of the application of electricity to lighting and motive power of every kind; and it was largely owing to his exertions that the restrictive regulations of the Board have been removed in these matters. It is the general opinion of his colleagues that he sacrificed his life by his over-zealous devotion to duty; and the public service in many branches must long feel the loss of so vigorous a commander."

THE KEITH GAS COMPRESSORS AT GLASGOW.

Readers who visit the Glasgow Exhibition must not fail to inspect the gas-compressing house which has been fitted up by the Water Motor and Automatic Liquid Elevator Company, Limited, of which Mr. James Keith is the Managing Director. The duplicate set of plant with which the house has been equipped compresses the gas for the Welsbach high-pressure gas system, about which and the Keith plant we had a descriptive article in the "JOURNAL" for the 30th ult. The accompanying illustration is a reproduction of a photograph of the compressors; and for an interior picture of this kind, the parts have come out very distinctly. The strong, clean-cut appearance of the apparatus in the photograph is a faithful representation of the original. Its operation was praised in the article mentioned, in which, too, details as to its capability and other points will be found.



THE LOOMIS GAS-PRODUCING PLANT.

It may, we think, be confidently asserted that at no period in the history of the gas industry has more attention been given to the utilization of this valuable product of coal distillation for heat and power producing purposes than is now being directed to it. The convenience and the cleanliness of small gas-engines have been testified to over and over again; and this general recognition of their advantages has led constructors to build others of higher power—with what success the exhibits in Paris last year fully demonstrated. Concurrently with the enlargement of the engines, efforts have been made to cheapen the fuel. No one, of course, can deny the immense advantage to power-users in towns of the proximity of the ordinary gas-mains to their premises, whereby they are enabled to draw as much or as little power as they require, and just when they need it, without having to set apart space for storage as in the case of ordinary fuel. But power is wanted in many places where there is no ordinary gas supply, and where steam-raising is expensive; and it is here that the various producer systems can be most usefully employed. The plant is compact, and it does not require to be housed in costly erections. Of these systems there are several; one of the best known on the other side of the Atlantic being that of Mr. Burdett Loomis, which is exploited by the Loomis-Pettibone Company, of New York. As it has already been described in the "JOURNAL," details need not be given here. It may be mentioned, however, that it has been designed for making a fixed gas from bituminous coal and wood; and it is claimed for it that it is the only process in operation generating such a gas and delivering it under pressure at a distance from the plant. But not only is the product a fixed gas, it is also stated to be a pure one, as, after passing through the scrubber for cleansing purposes, it is delivered into the holder, and passes thence to the engine—no purifying being required. We are informed that the Company have had plants working continuously for two years on bituminous coal, and not a particle of tar has found its way to the engine. Nor do they appear to have had any difficulty with clinkers and the cleaning of the fires, though they are using coals yielding as much as 20 per cent. of ash; the clinkers being broken up by reversing the process—making down-runs of producer gas and an occasional up-run of water gas. The Comp any have recently installed for the Winchester Repeating Arms Company of New Haven (Conn.), plant capable of dealing with 30 tons of bituminous coal per day for the production of gas for use n their forge-shop and annealing-room—the same gas being used for engine work. They have also put up plant, in connection with electrical distribution, at the Great Pilares Copper Mine at Nacosari, in Sonora, Mexico; the fuel employed being wood or local bituminous coal. A description of this installation appeared in the "Engineering and Mining Journal" for the 11th inst., and from it the following particulars are reproduced.

The plant consists of two sets, each having two 9 feet by 15 feet generators, with waste-heat boiler, scrubber, exhauster, valves, &c. The generators are cylindrical, constructed of steel, 9 feet in diameter and 15 feet high. The lining is of fire-brick, with arched grates, ashpit, and flue to the boiler in the bottom. The vertical boiler is of the multitubular type. All the gas generated passes through this boiler; thus utilizing the heat in the gas for making steam, which is passed through the fires for decomposition. The exhauster is of the Roots type; and by altering its speed, the rate of gas making can be changed to meet varying demands. Each set of generators will produce enough gas to supply engines of a total of 1000 brake horse power—one being in continuous service, with the other set in reserve. Two qualities of gas are made alternately, as the fires are supplied with steam or air, so two holders are in use—one, having a capacity of 5000 cubic feet, for water gas, and the other, a capacity of 15,000 cubic feet, for producer gas. The two gases are mixed in fixed proportion, giving a uniform gas, which is essential in operating gas-engines.

The fuel is charged through an open door in the top of the generator, and the gas is exhausted from the bottom of the fire; thus converting all tarry and volatile matter in bituminous coal and wood into a fixed gas, which is drawn through an ordinary water-spray scrubber by the exhauster, and delivered to the holder. Coal is shovelled into the top doors as needed. Wood is thrown in in lengths of 2 or 3 feet, and ordinary cordwood diameters. The fires are cleaned twice a week. The water for the scrubber is cooled by a simple tower, and used over and over again.

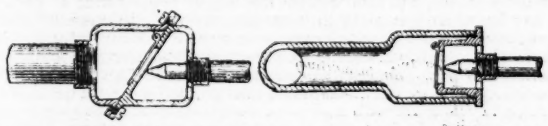
The power-house is a steel structure 108 feet by 62 feet. The dynamos are operated by eight Crossley gas-engines, rated at 110-horse power at 200 revolutions per minute. Each engine, with its fly-wheel, weighs about 18 tons, and is belted direct to a 65-kilowatt 260-volt direct-current electric generator with a normal speed of 910 revolutions per minute. The current is transmitted to the departments over four circuits.

Where the price of fuel is high, and the supply of water limited or unfit for boiler use, gas-power plants allow of economy being effected in fuel. A plant like that just described consumes from 1 to 1½ lbs. of bituminous or anthracite coal per brake horse-power-hour, varying with the quality of coal. The consumption at Nacosari, using bituminous coal from New Mexico, is less than 1½ lbs. per brake-horse-power; and using wood, about 3 lbs. for the same unit. This is stated to be less than half the fuel consumption in the best large steam plants doing similar work, and one-quarter the consumption of the ordinary plant. The advisability of using electrical distribution necessarily depends upon local conditions.

REGISTER OF PATENTS.

Atmospheric Gas-Burners.—Beaumont, F. J., of Stroud Green, N. No. 11,059; June 18, 1900.

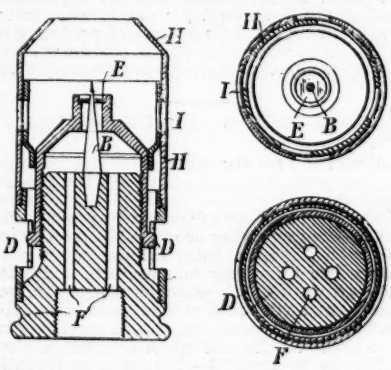
The object of the inventor is to construct atmospheric gas-burners (applicable for lighting or cooking) whereby all "back-flashing" is prevented. This is attained by constructing a box or casing attachable to, or forming part of, the burner proper, in which is hinged a light metallic or other fire-proof flap, preferably resting at an angle in its



normal condition. Behind the flap is arranged the nozzle, the gas from which draws air through an aperture in the casing, and impinging against the flap opens it and keeps it open. But should any "back-flash" occur, the force will act upon the flap and temporarily close it, to prevent the incoming-gas being ignited at the nipple. The annexed illustrations show two examples of the invention.

Regulator for Incandescent Gas-Burners.—Beese, R., of Dresden. No. 646. Jan. 10, 1901.

This regulator consists of a cylindrical body provided with several gas-channels F. The upper end is conical-shaped, and provided with a concentric neck in which a plate E is mounted. A conical-shaped pin B is mounted in the centre, with its upper end projecting through an opening in the plate E. The regulator carries on its lower edge a flange D passing through openings in a cylindrical housing screwed on



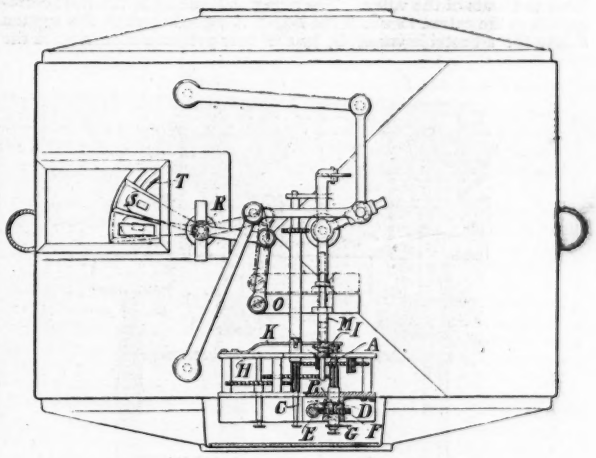
to the outer case, and adapted to support at its upper portion the lower end of the bunsen-tube H. Extending outwardly and upwardly therefrom, is a cylindrical collar, with openings in it adapted to register with the other opening I. By means of the flange D, the regulator can be revolved, and, owing to its screw-thread connection with the casing, is raised or lowered so that the openings in the plate E through which the gas passes are opened or closed more or less owing to the pin B. Simultaneously therewith, the cylindrical collar moving with the regulator controls the inflow of air through the openings I by more or less closing the same.

Prepayment Gas-Meters.—Gas-Meter Company, Limited, and Gow, J., of Stamford Hill, N. No. 1702; Jan. 24, 1901.

This improvement on patents Nos. 10,598 and 14,312 of 1889, has for its object to provide means for automatically cutting off the supply when the quantity of gas has been furnished for which prepayment has been made.

The principal parts of the prior patents were the sliding-arbor or spindle A of the registering pointer carrying the radial pin B, a notched collar D mounted loosely on the spindle, and with which the pin is adapted to engage, and a worm E provided with a spring ratchet C at its lower end, and engaging with a worm-wheel F on the collar. The sleeve carrying the stop-pointer G is also fixed to the collar.

According to the present invention, the arbor projects rearwardly through the frame-plate H, and bears against the short lower arm of a forked lever I pivoted near its lower end in a bracket on the frame-plate. A spring K bears against, and presses forward, the lower end of the lever and the arbor which bears against it. The upper forked end of the lever engages in the neck of a sliding draw-rod M, carried in vertical guide-brackets. The rod carries an arm O, which is connected to the spindle R of the admission-valve S. A ramp T secured to the valve-face raises the valve slightly from its seat in the open position; so that the valve may be kept open for any length of time without sticking to its seat.



In operation, the stop-pointer G is adjusted to the figure on the dial which corresponds to the amount of gas paid for, by turning the worm-spindle E with a suitable key. The notched collar being fixed to the worm-wheel, is rotated with it, so that the position of the notch and the stop-pointer always coincide.

So long as the pin B is against the outer edge of the collar D, the valve will be held in the open position (as shown), and the meter will continue in action until the pin is opposite the notch in the collar. The pin will then fall into the notch, allowing the arbor A to be pressed forward longitudinally under the action of the spring K. The upper end of the lever I is simultaneously forced inwards, causing the rod M, and its attached link and arm, to take up the positions shown in dotted lines, and close the valve S. When the stop-pointer is again set, the pin B travels up the inclined side of the notch; and the arbor A is forced inwards against the lower end of the lever I, which returns the parts to their original position, and opens the valve.

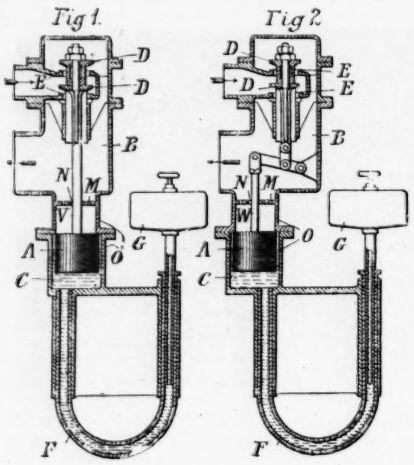
Strengthening Incandescent Bodies for Gas Lighting.—Thompson, W. P.; a communication from A. Wasmuth, of Hamburg. No. 2005; Jan. 29, 1901.

The patentee remarks that, as experience has shown, the ash contained in the fabric employed in the manufacture of incandescent mantles unfavourably affects, under certain circumstances, the illuminating power of the mantle; and the illuminating power of bodies made otherwise under equal conditions is better the purer the fibre of which the fabric is made. For this reason, specially pure fabric of ramie fibre has been preferred to a cotton fabric; but other fabrics of other suitable materials may be successfully employed if the fibre is as far as possible freed from its constituent salts by previous extraction or saturation. These pure fabrics have also the advantage of enabling mantles possessing a great intensity of light to be obtained when the salts of the earth metals necessary therefor are employed in the correct proportions; but mantles made of specially purified fabrics have the drawback that they are particularly susceptible to shocks, vibration, and the like. Numerous attempts have been made to remove this drawback; and it has been found possible to produce mantles possessing greater light-intensity and durability by adding a solution of magnesium sulphate in given proportions to the solution of salts employed for impregnating the fabric made from the purified fibre. By counter experiments, it may be determined that not only the magnesium contents of the magnesium sulphate, but also the sulphuric acid contents, is of importance for obtaining durable mantles. It is difficult to discover what causes this favourable action of magnesium sulphate in imparting durability and strength to the pure-ash skeleton; but numerous experiments have established beyond doubt the fact that this important technical effect exists. Probably the rough and adhesive magnesium oxide has the effect of producing in the ash-skeleton a better combination of the separate parts; while the presence of sulphuric acid, which leaves the denser oxides when the mantle is burnt off, successfully assists the desired result. One example, based on experiments, of the process for making durable incandescent bodies of great intensity, is given by the patentee as follows: The stocking-shaped mantle (made of as pure a fibre as possible) is, for instance, impregnated with the following solution: Thorium nitrate 30 parts, cerium nitrate 0·4 to 0·5 part, yttrium nitrate 0·03 to 0·05 part, erbium nitrate 0·01 to 0·025 part, magnesium sulphate 0·3 to 0·8 part, and distilled water 100 parts. The surplus solution is removed from the fabric in the ordinary manner; and the mantle is then dried and burnt off or incinerated as usual. In the dissolving of the above salts, thorium sulphate, magnesium sulphate, and the like are, of course, formed by decomposition; so that for the solution to be employed, it is only essential that magnesium and sulphuric acid in the form of dissolved salts should be contained, in the proportions indicated. In practice, it is preferred by the patentee to employ the magnesium sulphate in making the solution, because this salt is very cheap and can be easily obtained in a pure condition. The amount of magnesium sulphate contained may also be somewhat increased, but must be less than 2 per cent. of the solution, because otherwise the illuminating power of the mantle would be diminished, and a considerable scaling-off of the ash-skeleton would take place.

Pressure-Reducing Apparatus.—Kaeferle, F., of Hanover. No. 4885; March 7, 1901.

In this apparatus, the pressure of the gas is reduced or regulated by the rising and falling of a float which dips into a liquid closing a chamber, and thus more or less opens or closes a double-beat valve with conical faces or seats of equal diameter.

Two forms of construction are shown, in which A is the float, B the pressure-chamber, C the liquid closing the latter, and D and E the faces and seats of the valve. The rising and falling of the float corresponds to the extent to which the liquid is forced through the syphon F into the adjustable vessel G, by the over-pressure occurring in the



chamber B. If the pressure-agent has to pass through the apparatus for a lengthened period at a high rate of speed before it fills the conduit behind the apparatus sufficiently to check its speed, it frequently happens that the agent carries part of the liquid C from the vessel O with it; and the action of the apparatus is thus sensibly affected. In such cases, the valve D cannot open to a sufficient extent, because the float falls immediately the quantity of the liquid C is reduced. As a consequence, the requisite amount of pressure-agent does not flow to the conduit behind the apparatus; and the desired pressure is not obtained.

In this invention, such a disadvantage is removed by providing in the chamber O containing the liquid, below the chamber B, a partition M through a hole N in which the valve-rod V (fig. 1) or the connecting-rod W of the float (fig. 2) passes. The hole is only large enough to allow of the equalization of pressure in the chambers G and O.

In consequence of this arrangement, the equalization of pressure in the conduit takes place more gradually and uniformly. Also, the space remaining free round the spindle V or the connecting-rod W is so small that it is impossible for the pressure-agent to carry any portion of the liquid C from the vessel O with it into the conduit.

Cutting Off the Supply of Gas to Burners.—Rostin, H., and Szubert, S., of Berlin. No. 5226; March 12, 1901.

This invention is designed to provide means by which the heat developed by the gas-flame causes the expansion of atmospheric air, gas, or a volatile fluid, which, by the increase of its volume within a closed chamber, works on a membrane and forces the same to the outside, by which motion means are actuated to keep the valve of the burner open as long as the flame burns. If the flame happens to be extinguished, the air, gas, or fluid will cool down, and the pressure will relax so as to permit the valve to be automatically closed by a spring or otherwise.

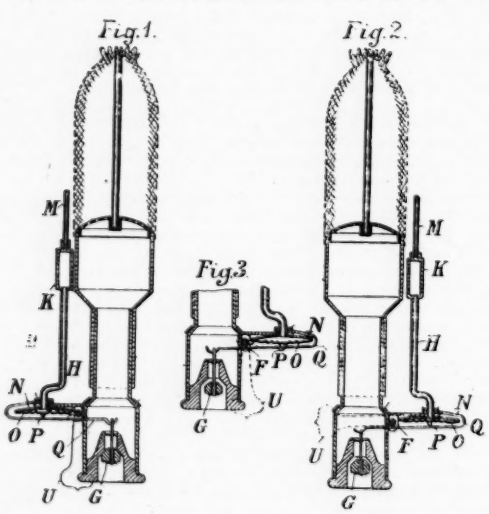


Fig. 1 is a vertical section through an incandescent gas-burner fitted with the improvements—the gas-valve being closed. Fig. 2 shows the same burner, seen from the other side—the gas-valve being opened before the flame has been ignited. Fig. 3 shows the gas-valve kept open through the medium of a device under influence of the flame heat.

The working of the device is as follows: Before lighting the gas, all parts take the position shown in fig. 1. The gas-cock is opened as usual; but the gas cannot enter the burner before the handle U of the key F is turned into the horizontal position indicated by dotted lines in fig. 2. By turning the handle, the toe of the key will bear against the spring-wire Q, and force it down so as to open the valve G sufficiently to admit gas into the burner and to the flame to be ignited. At this time, all parts take the position indicated in fig. 2. When the flame is burning, its heat quickly increases the temperature of the small metal, rod M, and this conducts the heat to the metal-box or body K, the gaseous or volatile contents of which will increase in volume, and, entering the body N, through the tube H, forces the metal disc O down so as to bring the stud P into contact with the spring and press it further down, thereby increasing the width of passage of gas through the valve-seat. The wire Q being forced downward from its position shown in fig. 2, will leave free the toe of the key; and the latter will be free to return into its original position shown in fig. 1, owing to the weight of the key-handle. At this time, the parts will take the position indicated in fig. 3; and they will continue thus as long as the flame emits heat—*i.e.*, as long as it is burning.

Supposing now that the flame be accidentally extinguished and the gas-cock of the burner left open, the gas will, for a short time, continue to escape through the burner; but as soon as the chamber K cools down, the substance contained in it will again contract, and the pressure operating upon the disc O will be released, the stud P will return into the position shown in figs. 1 and 2, and the valve G will be lifted and pressed against its seat by the wire Q. The valve being thus closed, no further escape of gas can take place, though the gas-cock continues open.

Incandescent Bodies for Gas Lighting.—Schultze, K., of Berlin. No. 5352; March 13, 1901.

The patentee's object is to produce incandescent bodies which "shall combine a high illuminating power with great firmness and durability in use, and this without the aid or employment of cerium in any form, as has hitherto been customary." In manufacturing incandescent bodies in which cerium, in any form, constitutes a component part, the fabrics (produced from vegetable fibres in the usual manner) are first impregnated with a solution composed in suitable proportions of zinc, tin, bismuthum, calcium, and a certain quantity of borax, and thereafter with a solution composed in suitable proportions of the nitrates of thorium, cerium, barium, strontium, indium, gallium, and samarium, after which the impregnated bodies are subjected to the action of a flame, and the original fabric destroyed. But for the purpose of carrying his invention into effect, the patentee prepares one solution only in which to impregnate the fabrics, consisting, for preference (by weight or measure) of 0·25 part of nitrate of uranium, and 0·75 part of nitrate of erbium; and to the one part thus created, he adds 250 parts of nitrate of thorium and 500 parts of distilled water.

These proportions of uranium and erbium are such as, in a general way, are found most convenient and desirable; but the patentee does not confine himself to the proportions stated in making up the one part of uranium and erbium, but "may vary the proportions stated in any suitable manner—from 0·12 to 0·50 part of nitrate of uranium, and from 0·25 part to 1·25 parts of nitrate of erbium." Whatever may be the proportions of these two nitrates, however, the added proportions of the nitrate of thorium and water would in all cases be as above stated. Also, in combination with the ingredients named, it may be found desirable to employ "any other substance or substances known to be in use for the purpose of producing incandescent bodies—such as, for example, the nitrates of calcium, magnesium, or strontium, or any combination thereof, with the exception of cerium in any form."

Gas Motor Engines.—Rollason, A., of Long Eaton. No. 5974; March 21, 1901.

This invention relates to gas-engines which give an impulse at every revolution of the crank-shaft, and which have two pistons moving in opposite directions in one cylinder, provided with lateral ports for the admission of the charge and for exhaust of the products of combustion at opposite ends—the ports being uncovered by the pistons as they are completing their outstroke, and being covered by the pistons as they advance, compressing the charge between them. In order that such engines may work satisfactorily when furnace or fuel gases are employed to work them, a volume of cool air must be forced through the working cylinder after each explosion, so as to cool the cylinder and the pistons, and to sweep out the products of combustion along with any dirt or dust that may be deposited—thus preparing the cylinder for the new explosive charge. The present invention relates to means of effecting such scavenging and cooling, and for admitting and compressing the explosive mixture into the cylinder at the proper times.

APPLICATIONS FOR LETTERS PATENT

9890.—Johnson, J. Y., "Treatment of coal-gas residues." A communication from the Deutsche Continental Gas Gesellschaft. May 13.

9901.—Glaskin, E. E., "Automatic governors for mixed gases." May 13.

10,001-2.—Haselwander, F. A., "Internal combustion engines." May 14.

10,013.—Westinghouse, G., "Production and utilization of gas." May 14.

10,024.—Breittmayer, L., "Extracting naphthalene from gas." May 14.

10,083.—Hudson, W., "Oil or gas engines." May 15.

10,110.—Haselwander, F. A., "Internal combustion engines." May 15.

10,158.—Hope, E., and Gilbert-Stringer, H. J. S., "Internal combustion engines." May 16.

10,180.—Sievers, W. H. A., "Atmospheric gas-burners." May 16

10,183.—Busch, C., "Generating acetylene gas." May 16.

10,220.—Gwynne, J., and Crewe, H. T., "Explosion engines." May 16.

10,223.—Cowan, W., "Prepayment gas-meters." May 16.

PARLIAMENTARY INTELLIGENCE.

GLEANINGS FROM THE COMMITTEE ROOMS.

Golborne, Leeds, and Harrogate Bills.

Parliamentary Committees continued to sit until the House of Commons rose on Friday last for the Whitsun recess; and the process of clearing the lists of Private Bills went on uninterruptedly to the end. Parliament will reassemble on June 6; but there is little gas or water material which affords promise of further excitement, if we except the Mond Gas Bill. The Leigh Corporation, contrary to the advice of Counsel, have determined not to oppose the Golborne Gas Company's Bill in its further progress; and we are glad to see that they now recognize that right is on the side of the Company, and that that right the might of Parliament will defend. Arrangements have been made with the land-owning opponents to the Leeds and Harrogate Water Bills, which have enabled both measures to proceed. In the case of the Leeds scheme one reservoir—the Healey—has been abandoned. The promoters also appear to have given up the portion of their proposal relating to the acquisition of land for protective purposes; and they will now content themselves with as little area as is necessary for their works.

HOUSE OF LORDS.

The following further progress had been made with Bills down to the Whitsuntide recess:—

Bills brought from the Commons, read the first time, and referred to the Examiners: Bingley Urban District Council Bill, British Gaslight Company Bill, Burton-upon-Trent Corporation Bill, Mansfield Corporation Bill, Metropolitan Water Companies (Amendment of Acts) Bill, Swanage Gas and Water Bill.

Bills read a second time and committed: Devonport Corporation (Gas) Bill, Horley District Gas Bill, Long Eaton Gas Bill, Tees Valley Water Board Bill, Tendring Hundred Water Bill, Wells Corporation Water Bill.

Bills reported, with amendments: Barrow-in-Furness Corporation Bill, Colwyn Bay and Colwyn Urban District Gas Bill, Elland Gas Bill, Harpenden District Gas Bill, Heywood and Middleton Water Board Bill, Wisbech Water Bill.

Bills read the third time and passed: Broadstairs and St. Peter's Water and Improvement Bill, Handsworth Urban District Council Bill, Leeds Corporation (General Powers) Bill, South Essex Water Bill.

The Gas Orders and Gas and Water Orders Confirmation Bills have passed the second reading.

The Rugby Water and Improvement Bill and the Stockport Corporation Water Bill have been referred to a Select Committee, consisting of Lord Pirbright (Chairman), the Duke of Wellington, Earl Graham, Earl Manvers, and Lord Digby; to meet on Tuesday, June 11.

The Burgess Hill Urban District Council have petitioned against the Burgess Hill Water Bill, the Kingswinford Rural District Council against the South Staffordshire Order, in the Water Orders Confirmation Bill (No. 1), and the Wirksworth Urban District Council against alterations in the Ilkeston and Heanor Water Board Bill.

HOUSE OF COMMONS.

The following further progress was made with Bills down to the Whitsuntide recess:—

Bills brought from the Lords, read the first time, and referred to the Examiners: Broadstairs and St. Peter's Water and Improvement Bill, Handsworth Urban District Council Bill, Leeds Corporation (General Powers) Bill, Poulton-le-Fylde Gas Bill, South Essex Water Bill, Southport Water (Transfer) Bill, Weston-super-Mare Gas Bill.

Bills read a second time and committed: New Swindon Gas Bill, Sheffield Corporation Bill, Shrewsbury Gas Bill, Sutton-in-Ashfield Urban District (Water) Bill.

Bills reported: Bath Gaslight and Coke Bill, Bradford Corporation Bill, Bury Corporation Bill, Cromer Water Bill, Oakham Water Bill, Wallasey Improvement Bill.

Bills read the third time and passed: Bingley Urban District Council Bill, British Gaslight Company Bill, Burton-upon-Trent Corporation Bill, Devonport Corporation (Gas) Bill, Metropolitan Water Companies (Amendment of Acts) Bill, Swanage Gas and Water Bill.

The Local Government Provisional Order (Gas) Bill has passed all its stages in the Lower House.

A Bill to confirm a Provisional Order under the Private Legislation Procedure (Scotland) Act, 1899, relating to Ardrossan Gas and Water was brought in last Tuesday, and read the first time.

A late petition having been presented for a Bill "to constitute a Joint Board representative of the Biggleswade Urban and Rural District Councils, with power to construct water-works, and to make provision for the supply of water within the districts of those Councils, and for other purposes," the matter came before the Standing Orders Committee, who reported in favour of the parties being allowed to proceed. The Bill was accordingly brought in last Thursday, and read the first time.

The South Metropolitan Gas Bill was down for third reading on Friday; but Mr. Lough had placed upon the paper notice of his intention to move "that the Bill be re-committed to the former Committee in respect of clause 5 (Sale of Unissued Stock), and that the Committee have leave to sit and proceed forthwith." The third reading was deferred till the 11th prox.

HOUSE OF COMMONS COMMITTEE.

Friday, May 10.

(*Before Colonel* WELBY, *Chairman, Mr.* LLOYD MORGAN, *Mr.* PLUMMER, *and Mr.* SOARES.)

MOND GAS BILL.

The proceedings on the Bill (*ante*, pp. 1127, 1236, 1322, 1387) were continued to-day.

Mr. *Henry Richardson*, Surveyor to the Handsworth Urban District Council, in whose district there are 46 miles of roads and streets, gave further evidence regarding the crowded state of the roads in which the Mond gas-main would probably be laid, if the scheme were sanctioned. There were several gas-engines in Handsworth using Birmingham gas in connection with private electrical installations.

Mr. YOUNG then addressed the Committee on behalf of Handsworth, whose opposition he said was both general and special. Handsworth held that the utility of the gas had not been proved, and that the possibility of distribution over a large area had not been established. It seemed also to be evident that the suggested cheapness of the gas was an illusion, having regard to its chemical nature and the difficulty of its application. Even if they started supplying at 2d. per 1000 cubic feet, it was not shown that in its ultimate application it would be cheaper than ordinary gas. He entered the strongest protest against a scheme of this description, which had never been tried over a large area, being forced upon an unwilling authority. The particular objection of Handsworth was contained in the following paragraph of their petition: "The district of your petitioners is mainly residential and agricultural, and contains very few factories or works. There is no demand in your petitioners' district for the gas proposed to be supplied, nor is there any likelihood of any such demand being made in the future." He asked the Committee to say that, whether the preamble was proved or not, it was wholly unnecessary and undesirable that the area of Handsworth should be included in the district. Mond gas was clearly not wanted there now; and it was not likely to be wanted in the future. In these circumstances, the Local Authority objected to power being given to tear up their roads. The cat had been let out of the bag when it was said that the Company included Handsworth in order to nestle up to Birmingham. If that were so, Handsworth might be used as a mere conduit-pipe, and so experience all the disadvantages and none of the advantages of the scheme. With regard to the roads, he pointed out that, full as they were at present, they would be still further occupied when two more mains were laid under the recently obtained Electric Lighting Order; and so the inconvenience and difficulty of laying fresh mains for the Mond gas would be all the greater. It was also matter of objection that there was no obligation on the Company to commence work. He contended that the Authority should not be saddled for all time with the risk of the Company coming into the district. Handsworth ought not to be exploited to enable the promoters to enter Birmingham; and, further, they could get into the manufacturing part of Birmingham without touching Handsworth at all. Who were the promoters bound to supply? The Bill remained as originally drawn; and therefore they were not bound to supply anybody unless he took a million cubic feet per quarter. Counsel pointed out how unlikely it was, unless compulsory powers to serve the man who desired to take only between a million a year and a million a quarter were put upon the promoters, that they would ever attempt to give such a supply. In conclusion, he asked the Committee in any event to exclude Handsworth from the operation of the scheme.

Mr. HUTCHINSON then opened the case for the Stourbridge Urban District Council, whose area consists of nearly 2000 acres, with a population of about 16,000. It could hardly be said to be a manufacturing district, seeing that the density of the population was only eight per acre; and for such an undertaking as the Mond scheme, it would be peculiarly inapplicable. The factories and works were exceedingly few and very widely separated, which showed that the district was not likely to be one to benefit by the extension to it of the provisions of the Bill. Stourbridge ought not to be included in the scheme for pegging out an area for the future operations of the new Company. In regard to competition, the Stourbridge Council (who owned the local gas undertaking) would be affected, because a substantial portion of the income they derived from the supply of gas might be diverted from them. It was true that the limit below which the promoters need not supply gas was 4 million cubic feet a year; but he understood this had been reduced, and now every gas-engine in the district which developed from 3½ to 4 horse power might fall under the operations of the Bill. This would totally destroy the whole of the Council's income derived from the supply of gas for power. Over the area of the Council, there were but 52 users of gas-engines; the largest being only from 8 to 10 horse power. Suppose the whole of the few factories in which gas could be used for the purposes of power were to commit themselves to the care of the Company, in order to supply gas to them, they would have to lay no less than from 35 to 37 miles of mains, which, on the evidence of Mr. Humphrey, would average about 18 inches in diameter. The income which the Company would derive from laying these mains, at 2d. per 1000 cubic feet, would be £345 per annum, which would give them only about 2 per cent. on the cost of the mains alone. This fact clearly showed that the district was entirely unsuited to be brought within the sphere of the Company's operation. When an undertaking of this kind came before Parliament, it was for the promoters to show in the first instance that public benefit would be derived from it, and that this benefit could not accrue without statutory powers being conferred. But the promoters had not proved that statutory powers were necessary in the public interest. The benefit arising would rest solely and exclusively on the statutory powers gained. The fact that this was a great invention was no reason why the Committee should endow it with statutory powers. It rested upon the promoters to show that national benefit could not be derived from the invention without the grant of such powers. For six or eight years different kinds of producer gas had been ordinary market commodities, and manufacturers had worked them with advantage to themselves.

The reply to this statement was that they did not turn out sulphate of ammonia. But the Committee were not sitting to pass a statute to produce sulphate of ammonia. It was urged that, although manufacturers could produce their own gas, they could not do it so economically as one of the gigantic stations mentioned in the Bill. There was, however, not a tittle of evidence to justify such an assumption. The promoters had failed to show that the gas could be obtained more cheaply by distribution than by traders establishing their own plant. They had not proved that statutory powers were essential; and therefore he should ask the Committee to say the Bill could not proceed. Failing this, he should ask the Committee to find that no justification existed for including Stourbridge.

Mr. *W. Goddard*, Clerk to the Urban District Council of Stourbridge, examined by Mr. HUTCHINSON, said the Council were the owners of the gas-works, and the limits of supply included certain outlying districts. The population of the area of the Council was 16,200, and of the gas supply district about 36,000. Some of the streets, being narrow and tortuous, were decidedly not adapted for the reception of large pipes. The proposals of the Bill as regarded interference with roads would be very prejudicial. Having regard to the fact that persons residing in the district who wanted to use power had the alternative of gas or electricity, he did not think there was any need for the proposed scheme in the Stourbridge district.

Cross-examined: He had heard that the Amblecote Council—one of the places in the Stourbridge gas supply district—had passed a resolution in favour of the Bill; and Lye and Wollescote, the only other places in the gas area, were not opposing.

Mr. *W. North*, Engineer and Manager of the Stourbridge Gas-Works, examined by Mr. HUTCHINSON, said the present price of gas, owing to the increased price of coal, was 3s. and 2s. 10d. per 1000 cubic feet; previously it was 2s. 8d. and 2s. 6d. There were a few manufactories in the district—chain, spade, and shovel works; but in the town, which was largely residential, the trades were chiefly small. The sale of gas, excluding public lighting, for the year to March 31, 1900, was 121,654,100 cubic feet; and of this quantity 10,318,000 cubic feet were supplied for power. The consumption per gas-engine varied from 1,360,000 down to 21,900 cubic feet per annum. The largest gas-engine supplied was one of 16-horse power. There seemed to be little likelihood of the manufactures of the district increasing. The 52 gas-engines referred to were scattered over the whole area; and to supply them with Mond gas-mains over practically the whole area would have to be laid. The reduction of the limit at which the Company must supply consumers from 4 million to 1 million cubic feet per annum would seriously interfere with the Council's gas undertaking, having regard to the conditions under which the Local Authority took over the gas-works and their powers and obligations; the transfer being undertaken by the Council in the firm conviction that no competition would be allowed. There were frequent subsidences in the district, which led to serious loss of gas; and he thought the Mond Company would suffer similarly, having regard to the large size of their proposed mains and the increased pressure at which the gas would be supplied. He did not think any main they could lay would stand a drop of 4 ft. 6 in., which had occurred in the district. If the Mond Company had power to alter the Council's mains, it would interfere with the system on which they were laid.

Cross-examined by Mr. WALLACE: It was ridiculous to suggest arbitration in case of dispute in connection with interference with the Council's mains. Arbitration would take too long. When subsidences occurred, the ground often sank rapidly. He objected to the sliding-scale proposed, because, for instance, if the Company paid 7s. per ton more for their slack, they would get for this excess 10s. 6d. from the consumer.

Mr. LLOYD then addressed the Committee for the Bilston Gas Company, whose area of supply is 5400 acres, and capital invested £54,000; their charges since the increase in the price of coal being for lighting from 2s. 9d. to 3s. per 1000 cubic feet, and for power from 2s. 3d. to 2s. 6d. He asked the Committee not to pass the Bill, because it was absolutely unprecedented to practically authorize a monopoly over an area in respect of a patented commodity, and further because the scheme was so experimental. Mond gas had been known for twenty years, yet it was not suggested that in more than ten isolated cases in this country had firms taken it up; so that the promoters had certainly not established the commercial utility of the article. In the case of electricity, its utility and power had to become known and recognized before parliamentary powers were granted in regard to it. That was the proper procedure; but here Dr. Mond was starting at the other end. He asked for parliamentary powers first, and then proposed to establish the utility of his patent. Counsel asked the Committee to refuse the application until Dr. Mond had demonstrated that the gas could be distributed. By the time he did this, the patents would probably have expired; and so the Company would save the £75,000 they proposed to give him.

Mr. MOON said he represented the Wolverhampton Gas Company, who had spent £253,000 on gas-works, and supplied no less than 537 million cubic feet per annum, of which 25 per cent. was for heating and power purposes. The Company supplied 217 gas-engines, of which 114 were over 5-horse power; the total horse power supplied by the Company being 1633. The Company obtained power to supply gas-engines in 1893; and this development of the industry had been growing. The Company were by no means at the end of the demand which there would be, as they hoped, for gas fuel for both heating and power purposes. The Company objected to the introduction of Mond gas in competition with their own. There was no instance later than the fifties, he believed, in which Parliament sanctioned the introduction of competition; so that the powers now sought were very exceptional. Reference had been made to the probability of some gas, under the title of producer gas, being introduced and made use of by the Mond Company. Professor Lewes had told them that water gas was a producer gas; and water gas could be sold, and so altered in constitution as to provide a very excellent illuminant. If Mond gas were a failure, and the Company took to supplying water gas, they would at once come into serious competition with 75 per cent. of the business of the Wolverhampton Gas Company.

The CHAIRMAN: Did not the promoters undertake to exclude illuminating gas?

Mr. BAGGALLAY: It is provided in the Bill.

The CHAIRMAN: That will affect, not only Mond gas, but all other possible gases referred to in the preamble?

Mr. MOON: As it is, they have power to supply for purposes other than illuminating.

Mr. BAGGALLAY: No; we could not supply other gas, because we are restricted as to the amount of carbonic oxide. That excludes water gas.

Mr. MOON: The Company could supply water gas to a large mill or factory; and they could use it for illuminating purposes.

Mr. BAGGALLAY: I really do not think we could do that practically. It would be no nearer a gas for illuminating purposes than coal would be. It would only be a raw material, which the consumer would have to treat absolutely *de novo*, and from which he could only make an illuminating gas by setting up machinery.

Mr. MOON (continuing) said it was not difficult to convert water gas into a perfectly innocuous illuminant; certainly it was conceivable that it might be done. It was not sufficient for the promoters to show that they would do no harm; to obtain powers from Parliament to carry on the business, they had to prove that the Bill would be advantageous. There was no considerable demand for Mond gas, even if it could be distributed as cheaply as was alleged. Then the agreement under which the Company had power to supply at all was conditional on the present Bill passing into law in the session of 1901; on the Company being incorporated by Act of Parliament; and on 22,500 shares in the Company being subscribed for by responsible persons. Unless these conditions were complied with by a certain date in 1903, either of the parties might, by notice in writing to the other, annul the agreement. This, from the point of view of principle and parliamentary legislation, seemed to be a cardinal vice, because it put it in the power of Dr. Mond to render the Bill absolutely useless, unless a certain condition in regard to the contribution of capital was performed within a certain time. The result would be that the Company would be no longer able to supply Mond gas, which was the ostensible and only reason put forward for the passing of the Bill. It was the public advantage in the supply of Mond gas, not the advantage in the supply of other producer gases, which had been put before the Committee. Dr. Mond, by means of this arrangement, defeated the main object of the Bill. The other powers of the Bill would remain in force—the authority to take land and to compete with existing gas undertakings by the supply of any producer gas which they could manufacture. Either it was to the public advantage that Mond gas should be supplied, or it was not. If it was not, the Bill ought not to pass. If it was, it should not be in Dr. Mond's power to defeat the public interest. If it was true that the promoters would not interfere with the Gas Companies, because they would supply for a different purpose, why should they not insert a provision giving protection? With regard to the Willenhall Gas Company, Mr. Pembroke Stephens, their representative, was not present; but this Company adopted all the arguments and statements laid before the Committee by the opponents. He had only to add that the Willenhall Gas Company supplied 32 per cent. of their total output for power purposes; and he asked for them the same protection as he requested for the Wolverhampton Gas Company.

Mr. PRITCHARD (on behalf of the Midland Electric Corporation for Power Distribution) said he did not think it would be necessary to call evidence. His Company differed from many other electric supply companies in that they obtained their powers, not by Special Act, as was usually the case, but by Provisional Order. The difference lay in this—that to obtain a Provisional Order they had first of all to secure the consent of the Local Authorities. The Board of Trade would not grant the Order without their consent; and, as a fact, his clients did obtain the consent of the Local Authorities in every district they covered, which included the whole of the area the Mond Company proposed to supply. The works of his Company were at Tipton. They were very nearly complete; and the Company were spending over £300,000. They anticipated being able to supply, in a few months, cheap power throughout the district. He asked the Committee to say the preamble of the Bill was not proved.

Mr. WILKINSON (for the Brierley Hill Gas Company) also expressed the opinion that their case had been fully covered by the arguments and evidence already adduced. He therefore left the matter in the hands of the Committee.

Mr. STATHAM (on behalf of the Dudley Gas Company) said he did not propose to call any evidence, but to direct attention to the financial merits or demerits of the scheme. The scheme, if sanctioned, stood every prospect of being a huge financial fiasco; and the prestige which would be given to it by the passing of the Bill would encourage people to subscribe money, every penny of which they might lose. They were asked to do this out of sympathy with the South Staffordshire Mines Drainage Commission. No one had more sympathy with them than his clients; but if the argument was to weigh, he would point out that the total horse power they required would be at most 1000. The gas needed for this would be about 200 million cubic feet, which would be the quantity the Company would produce in a third of a week, on the basis of what they must make if the scheme were to pay. Then it was said that for every 6s. they paid for a ton of slack, they would save 4s. 6d. by means of the sulphate of ammonia. This looked like a primary saving of 75 per cent.; but it was a hopeless fallacy. They would receive 2d. per 1000 cubic feet for the gas; and as the slack produced (say) 150,000 cubic feet of gas per ton, the income per ton would be 25s., or, with the sulphate of ammonia, 29s. 6d. He would agree that they would save 4s. 6d. out of this, which would be about 13 per cent., not 75 per cent. If the promoters were wrong in their estimates by 20 per cent., the saving by means of the sulphate of ammonia would vanish entirely. Everyone knew that Brunner, Mond, and Co. were an eminently prosperous firm; but they were putting nothing into the scheme. Was Dr. Mond? No—he was taking £75,000 out; and although he was receiving this money in paper, it could be readily converted into money. They all admitted the value of the evidence

of Lord Kelvin; but he had no commercial experience of the value of Mond gas, and he was no authority as to practical working with it. Would the Committee, because of the prestige attaching to his name, override the commercial experience of large firms like Nettlefolds, who had attempted to use Mond gas and dropped it? The scheme was almost certainly doomed to commercial failure. In that case, an Abandonment Bill must be brought in; and it would be accompanied by a Bill pointing out the large expenses which the Company had incurred, and craving permission to use their enormous apparatus and mains for the supply of something else. He urged that parliamentary power ought, on principle, never to be granted to assist private enterprise to do what private enterprise could do for itself without parliamentary powers; and therefore he asked the Committee to reject the preamble.

Monday, May 13.

Mr. BALFOUR BROWNE, on behalf of the promoters, to-day replied on the whole case. He said he was convinced that Parliament would never go too far if it allowed the enormous brake power of vested interests to clog its wheels; and in this particular instance he was convinced the Committee were asked to prevent the introduction of a very great benefit and improvement to the trade of the country, by a very small number of Local Authorities and Companies who had no argument but that of vested rights. He proceeded to call attention to the evidence; showing the advantages of Mond gas for heating and power purposes, and to the local evidence giving the advantages which would arise from the use of the gas, which he said would not really compete with coal gas, and would in many respects be more useful than electricity. In order to show that the gas would be an advantage to the trade of the country, Counsel quoted from the testimony of Sir F. Bramwell, Professor Dewar, Lord Kelvin, and other witnesses of great eminence, the consensus of whose opinion was as to the utility of the invention. What was said on the other side? Professor Lewes was called. He admitted, however, that Mond gas was a good gas, and that the fuel of the future would be fuel gas, manufactured at, and distributed from, a central station; and, further, that it would be impossible for small men to put up their own gas plant. Really all he had to say against the Mond scheme was that he wanted another gas to be invented to take the place of Mond gas. Then Professor Lewes fell back upon water gas, and said the gas to be invented would be something of that nature. But the Professor stated that water gas contained 40 per cent. of carbon monoxide; and therefore it could not be distributed under the Home Office regulations, which said that the proportion of carbon monoxide in a gas distributed should not be more than one-third of this quantity. Professor Lewes also stated that Mond gas could not be converted into an illuminant. This was very important. He (Mr. Balfour Browne) would show that there would be no competition between Mond gas and the ordinary gas of the opponents. Mond gas in every way came within Professor Lewes's description of the gas of the future, except that he said that that gas had yet to be invented. The local evidence in favour of the scheme was exceedingly strong. To practical men in the district, the introduction of Mond gas was very important; and they held that it must not be postponed. The meeting at Birmingham at which the resolution in favour of the scheme was unanimously passed, was attended by 200 manufacturers. These men knew their business. They were fighting very hard for their industrial existence; and there was no reason why Parliament should withhold its consent to their having this gas at the cheap rate offered by the Company. There was a consensus of opinion among the local traders that the gas would be useful, and that it would be largely employed in many trades. The only criticism he had heard of the Bill was that the gas could not be used for boilers. But the promoters had never suggested that it could; and therefore the criticism was valueless. It was contended that the Company would compete with the Local Authorities. Three witnesses, however, had said that Mond gas could not be used as an illuminant; so that there would not be any competition in this respect. As to competition in the supply of gas for power, they would not supply less than a million cubic feet in any case; so that they could not compete in the supply of the very small consumers. When, however, the consumption was beyond a certain amount, common gas could not be employed, because it was too expensive; and it was for this class of consumer—not the very small nor the very large, the latter being able perhaps to supply themselves—that the Company proposed to cater. The slack or coal gasified at the works, when the Company was in full operation, would be 600 tons per day, or 180,000 tons a year; and the gas made would be 84 million cubic feet per day, or 25,200 million cubic feet a year. Taking the number of consumers at 1000, this would mean an average consumption of 84,000 cubic feet per day, which was equal to 12 cwt. of coal gasified; or an average consumption of 25,200,000 cubic feet per annum, which was equal to only 180 tons of coal gasified. In the Bill, the minimum customer was to take 4 million cubic feet a year, which was equal to only 28 tons of coal gasified per annum, or 2 cwt. per day. The Committee would therefore see that he was right when, in opening, he said the Company sought to supply the small manufacturers. There had been some dispute because one or two witnesses said the Company would only supply the large, not the small, consumer. He admitted that some very large consumers might profitably supply themselves, but he was surely right in saying the Company would be a very great advantage to the small man. By the minimum of 4 million cubic feet per annum, they rejected the very small consumer. But there was a class using less than this; and it was this class which found ordinary coal gas, at its usual high price, cheaper than Mond gas would be. This was the very small consumer which the Company would not touch, having regard to their limit of 1 million cubic feet. Therefore he held that there would be practically no competition between Mond gas and coal gas. The subject of competition in London, in relation to electricity, was carefully considered by the Board of Trade as long ago as in 1889, when Major Marindin reported that competition was, on the whole, advantageous. But he said that, where there were two companies in a district, one ought to supply the alternating current and the other the continuous, because the two were different commodities; it being thought that the alternating current was not nearly so effective for power purposes as the continuous. In the present case, there were two different commodities; and they were to be used for entirely different purposes. There would be no competition; and, in these circumstances, would not the Committee allow the promoters to carry out this very great improvement? Mr. Jones said it would not pay the Mond Company to supply the small man, and that the big man could not afford to take ordinary gas. This was quite understandable; but if the large man could get Mond gas at anything like 2d. per 1000 cubic feet, the evidence showed he would use it. This proved that there really would be no competition—that the Mond Company had a province all to themselves, between the very biggest manufacturer who might supply himself and the very smallest who might be able to take coal gas from an ordinary company. Lord R. Cecil fell into a very serious mistake when he said it was of no use to offer this gas, because the cost of distribution was nearly equal to that of manufacture. The same argument was absolutely applicable to electricity; for while the cost of generating electricity was 0·66d. per unit, that of distribution was 0·65d. per unit. Yet everyone admitted that electricity could be distributed over an immense area at a profit, and Parliament had sanctioned a number of Electrical Power Distribution Bills covering districts several times the size of that of the Mond Company. It was true that some very large traders might be able to produce Mond gas as cheaply as the Company; but they were not counted on. It was the middle rank of manufacturers to whom the Company looked for their customers. Witnesses on both sides agreed that the Company could distribute cheaply; so that the criticism on this point disappeared. Then it was suggested that the area should be reduced. It would be a difficult thing to get capital subscribed for one-half or two-thirds of a scheme. The great value, however, of large areas for these purposes was that they gave a wide diversity factor; and this was the reason why all the power companies had applied for large districts. No local authority could go outside their own area; and therefore they could not have as good a diversity factor as a concern covering a large district. In a large area, if manufacturers left one part, probably others would commence business in another; but it would be very serious if a local authority, with their much more restricted area, lost any large manufacturers. One of the chief reasons for including Handsworth in the district, although there were few manufactories there at present, was that where there was cheap power and cheap land (as was the case here) manufactories would spring up. As to the Local Authorities—Dudley, Wolverhampton, Wednesbury, Sedgley, and Tipton—practically all the district to the west of the area was satisfied with the scheme. Walsall wanted to distribute the gas themselves. Out of 27 Local Authorities only 6 opposed; and of these latter, all were the owners of gas-works except Handsworth. Therefore 21 were not opposing, though some of them might be reserving their opposition for the House of Lords. Four were not appearing at all; ten were absolutely settled with. There were nine Gas Companies in the district, of whom six (including Birmingham, because Birmingham in this district was practically a company, not a local authority) opposed. Three were not opposing. There were seven Gas Local Authorities, of whom five were, and two were not, opposing. These figures, he thought, were a little startling. What was the objection of the Local Authorities? Really, it was fear of competition, which could not take place. But if it could, would it not be a good thing? Suppose the Mond Company were going to supply manufacturers at a cheaper rate than the Local Authorities. Would the Committee allow these Local Authorities to stand between the Company and the manufacturers simply because they had been allowed to provide private consumers with gas? If the Local Authorities could supply more cheaply, it was certain the manufacturers would not take gas from the Company. But if the Company could give the cheaper supply, why should not the manufacturers have their gas? The Gas Companies were not supplying gas at the present time to any large extent for power purposes. Would they be injured? Suppose these Companies to-morrow came to Parliament for further capital to put up large works for the supply of gas, even at 1s. 10d. per 1000 cubic feet for power or heating, would that benefit them? Not one penny, because no gas company was ever allowed to raise capital for the benefit of the company, owing to the operation of the auction clauses. Before the Joint Select Committee presided over by Lord Cross, a similar question to that involved in the present Bill was raised with regard to the distribution of electricity; and the finding of the Committee was that, where sufficient public advantage was shown, powers might be given for the supply of electrical energy over an area which included the districts of numerous local authorities. It was true this was with regard to electricity; but the question here was the same. Further, the Committee said the local authorities should be entitled to be heard before the Board of Trade, but should not have, so to speak, a provisional veto, only to be dispensed with in special cases by the Board of Trade. If the local authorities were not to have a provisional veto in the case of electricity, why should they have it in the case of Mond gas? The two things were exactly the same. Sir James Kitson's Committee, who considered a number of Electrical Power Bills last year, stated that the value of electricity as a means of transmitting and applying energy had been amply demonstrated; and its importance to the industries of the counties was admitted. The Committee accordingly advised that it was of public advantage to facilitate measures which might ensure a general supply of electrical power to all consumers who might seek to avail themselves of the economy and efficiency involved in its distribution and application. If this was true of electricity, it was equally true of Mond gas. It was said the object of the Bill was to put a purely fictitious value upon particular patents, and to force the gas on a certain district so as to obtain a monopoly. This he absolutely denied. The Bill gave no value to a particular patent. Dr. Mond was the patentee, and for a certain number of years had the power to license persons to use his patent. To-day he had a monopoly in the district. All that he was doing was to transfer to the Company, for a consideration, his power to grant licences. If the word "exclusive" in the agreement were objected to, it need not be used. The patentee had the exclusive right to grant licences so long as the patents existed. The Bill simply gave the Company a monopoly during the existence of the patents—no longer. True, at the end of this period the Company would

be in the district; but that would not prevent anyone else supplying Mond gas there, provided they obtained the consent of Parliament to break open the roads, &c. Therefore the Company would have no exclusive right, except during the existence of the patents. It was said Dr. Mond was the only person who would benefit; and that he would get £75,000 down. He would explain the financial position. First of all, the Bill was promoted by practical men who had to spend their own money in parliamentary proceedings. There was no suggestion of any promotion money or commission. The Company could not start until £225,000 had been subscribed. This was security to the public. Dr. Mond's remuneration was entirely in ordinary shares, and was dependent on the success of the undertaking, because, if he received (say) £75,000 worth of shares, and the concern was not successful, the shares would realize nothing. He would receive 7500 shares in instalments; and it would not be until the whole of the £225,000 had been subscribed, that he would get his £75,000. This was out of a total capital of £1,000,000. He would also receive a moiety of any sub-licences granted in the district. In return, he would part with his own exclusive licence to the Company, to make use of the invention within the whole of the area. It could not be doubted that the district was a good one for the purpose; and therefore Dr. Mond was parting with a valuable right. Dr. Mond further agreed that the Company should have the benefit of all future improvements—the Company to communicate to Dr. Mond any improvements they might make or discover, whether patented or not; so that the benefit would be mutual. Dr. Mond would pay all the fees for keeping the patents, &c., in force; and he would supply, free of charge, all plans and details necessary for the erection of the plant. He (Counsel) thought the Company were the gainers. Dr. Mond's real remuneration would be not in the shares he received, but in the demonstration in the district of the value of Mond gas for power and heating purposes. If the demonstration were successfully carried out, no doubt Dr. Mond would reap in the future, as he would deserve, very large benefits indeed. Mr. Freeman raised the point that by some means or other the Company, by the use of the word "exclusive," would override section 22 of the Patent Act, which provided for a compulsory licence in certain cases being granted by the Board of Trade. This was not the effect of the Bill, and it was not the intention of the promoters; but if the opponents were nervous on the point, they would insert a clause making the matter clear. With regard to the exclusion of Manchester, Liverpool, Oldham, and other large towns from the Lancashire Electric Power Bill, to which reference had been made, these towns were never included in the Bill; the proposal being simply that the promoters should have power to lay their cables through the towns to supply places beyond, but that they should not supply without the consent of the local authority. It was true that even the power to break up roads was refused; but it was pointed out that beyond Liverpool there was nothing but the Mersey, and that Manchester being in the south-east corner of the district there was nothing beyond it. It was complained that there was no obligation on the Company to either commence or end their work. The criticism was fair; and he was willing to insert a clause providing that if, within two years, the Company had not begun the work, and within four years had not made substantial progress, these powers should cease. With regard to the agreement between Dr Mond and the Company, opposing Counsel apparently thought that if this was annulled the Act would stand, and the Company could go on supplying, not Mond gas, because that depended on the agreement, but some other producer gas. He hoped the Committee would not think the promoters were trying to perpetrate a fraud upon Parliament. Such a thing had never been in the promoters' minds. Their whole object was to supply Mond gas; and he was perfectly willing to make it clear that the only gas the Company would supply was Mond gas or a modification or improvement of Mond gas, and, further, that if the agreement was not carried out within a reasonable time, all the powers under the Act should cease. If Counsel objected to the word "exclusive," it could be omitted, and instead Dr. Mond would bind himself not to grant licences inside the district on more favourable terms than to anyone outside the district. The Company, however, must have some protection; and what he suggested was that Dr. Mond should not grant any other licence inside the district for distributing or selling Mond gas. This would still leave him entirely free as to private individuals. If this were done, the word "exclusive" could be omitted. As to the contention that the gas could not be used in connection with pumping, the Company were quite prepared to take the risk; their belief being that, apart from any intermediate apparatus, it could be used for this purpose. Everybody was convinced of the necessity for cheap fuel. Everyone on both sides had told the Committee that the fuel of the future would be gaseous; and some of the witnesses had stated that Mond producer gas was the best known at present, and the only one which would comply with the regulations of the Home Office regarding carbon monoxide. Who stood in the way of this supply to the manufacturers, who had told the Committee that they wanted it? The Local Authorities—not in the public interest, but as traders in gas—and some Companies who thought they would be injured. He had, however, shown that competition would not take place; and, further, no gas company would ever be allowed to do anything to serve the public except as bare trustees, by raising sufficient capital under the auction clauses to continue, so that they could not benefit by the extension of their business. They were standing in the way of what would obviously be a public benefit. Practical men told them the trade of the district was sorely hit by competition, and that everything possible to reduce the cost of production was essential; and he asked the Committee, therefore, not to allow these Local Authorities to stand in the way. This was an important development; and if the Committee blocked it, they would injure manufacturers and wound the nation. He asked them, therefore, to pass the preamble of the Bill.

The room was then cleared while the Committee deliberated in private. On the re-admission of the parties about an hour-and-a-half later,

The CHAIRMAN said: The Committee find the preamble of the Bill proved, subject to these conditions: The Committee consider that, in addition to those points which have been promised by Counsel for the promoters, (1) any new development of gas permitted by the Bill must be certificated by the Board of Trade; (2) the shares to be allotted to Dr. Mond, the patentee, to rank as follows: £40,000 for dividend with the other shares, and £35,000 for dividend after the holders of the other shares have received 5 per cent.

Friday, May 17.

The Committee proceeded to-day to deal with the clauses which had been prepared or amended to comply with their decision. Counsel for Handsworth, West Bromwich, Oldbury, Smethwick, Dudley, Birmingham, and Walsall withdrew from consideration of the clauses, with a view to further opposing the Bill in the House of Lords.

The CHAIRMAN: The Committee notice that all other producer gas besides Mond gas has been struck out. The Committee's decision was not to that effect. It was to the effect that any other gas would have to be certificated by the Board of Trade.

Mr. WALLACE: That appears in the definition of Mond gas.

The CHAIRMAN: But this would prevent the Company using any other.

Mr. WALLACE: Unless it came under the definition. In the rider, we proposed adding: "'Mond gas' means a producer gas containing in the dry state from 33 to 42 per cent. by volume of combustible gases, which consist of 10 to 14 volumes of carbon monoxide, 1 to 4 volumes of hydrocarbons, and the balance of hydrogen." I think we ought to add: "or such other development as may be approved by the Board of Trade." That is done by clause 5. If the Committee intended it, we would sooner keep in the Bill "producer gas or Mond gas."

The CHAIRMAN: I do not think it was the intention of the Committee to cut out the idea of other producer gas, because we had to look to the public interest.

Mr. WALLACE: Then I think we had better put it in the body of the Bill, with the proviso that such development must be approved by the Board of Trade.

The CHAIRMAN: Yes.

Mr. WALLACE: Then we will restore those words to the body of the Bill.

Mr. BAGGALLAY: I think we shall still want a definition of Mond gas; and then in clause 5 we shall need power to distribute "the producer gas commonly known as Mond gas, and any other gas approved by the Board of Trade," instead of "any development of Mond gas approved by the Board of Trade."

The CHAIRMAN: The definition of Mond gas given seems to insist upon there being at least 10 volumes of carbon monoxide. I think the Board of Trade require there should not be more than 14 volumes. What is the use of putting in any minimum? It might tie up a new discovery.

Mr. WALLACE: It might read "which consist of not exceeding 14 volumes of carbon monoxide." There is one way of getting rid of the difficulty, and that is by having no definition at all of Mond gas—leaving it "producer gas or Mond gas." Then we should be limited by the Home Office not to exceed 14 volumes; so that everything would be there.

The CHAIRMAN: It should be in some clause that the carbon monoxide would not exceed 14 volumes.

Mr. WALLACE: It is in the clause. So that, having put in the word "producer," and having left the Bill as it originally stood, there is no need for a definition.

The CHAIRMAN: I think the definition had better come out.

The definition was accordingly omitted; and it was decided to proceed with other parts of the Bill while clause 5 was being rewritten.

To clause 38, which relates to the obligation of the Company to supply gas, it was proposed to add the words: "Provided, further, that the Company shall not supply any person with a less quantity of gas than 1 million cubic feet in a year; nor shall the Company supply gas for domesticpurposes."

Mr. PLUMMER: I thought you were going to provide for "domestic purposes" by imposing the limit of a million cubic feet.

Mr. WALLACE: Yes; that is my view. If you leave in "domestic purposes," you will want a definition of it.

Mr. PLUMMER: The million cubic feet is a clear line.

The CHAIRMAN: We will take out the words, "nor shall the Company supply gas for domestic purposes."

The words were accordingly struck out, and the first portion of the proposed addition agreed to.

Clause 39 directed that: "The Company may charge and receive in respect of gas supplied by them such sums as may be agreed upon between them and the consumer, being at a rate or price not exceeding 3d. per 1000 cubic feet, if the quantity taken by the consumer be not less than 4 million per quarter of thirteen weeks, and not exceeding 4d. per 1000 cubic feet if the quantity taken by the consumer be less than the above." After some slight discussion, the proviso to this clause was amended so that it read as follows, the words in *italics* being those added:—

Provided that, should the price of good quality slack at any time exceed the price of 6s. per ton delivered at the works of the Company, then the price of gas may, *subject to the approval of the Board of Trade on proof given to them of the price paid for such slack*, be increased beyond the above maximum by one-eighth of a penny per 1000 cubic feet for every shilling by which the price of slack per ton shall exceed the price of 6s. per ton delivered at the works of the Company, *or by such other proportionate amount as the Board of Trade may determine*, so long as such excess continues.

The first amendment was made in consequence of the observations of the Lord Chairman of Committees, and the second owing to a statement by the Chairman that the Committee rather felt it had been proved that, if the price of slack increased, the benefit would be greater to the Company than to the consumer; whereas they thought the increase of price should be equally adjusted between the Company and the consumer.

A clause (39A) was then added to the Bill, providing penalties for failure to supply similar to those in the Electric Lighting Acts; and a further clause (39B) directed that it should not be lawful for the Company at any time to supply gas which contained more than 14 per cent. of carbon monoxide, or which did not possess a distinctive and readily perceptible smell—the penalty for contravention of this provision being

fixed at not more than £50. The latter clause was inserted at the instance of the Home Office.

Clause 45A, which was accepted by the Committee, provided that if within two years from Jan. 1, 1902, the Company had not substantially commenced their works, and if within four years from the same date they had not erected a generating station or generating stations, sufficient in the opinion of the Board of Trade, and were not in a position to supply therefrom, the Board of Trade might order that the powers of the Company under the Act should cease as to the whole or any part of the area of supply.

Clause 47A, which was also accepted, related to the keeping of a map by the Company showing the line and depth below the surface of all existing mains and other underground works, which map was to be open to all applicants at reasonable times, and on payment of a slight charge

In accordance with Mr. Balfour Browne's statement as to the conditions on which the grant by Dr. Mond of an "exclusive licence" to the Company would be withdrawn, an amended schedule was brought up by the promoters and agreed to. In this document, the grant of "a licence" was provided for, and it was also agreed that Dr. Mond or the other owners for the time being of the patents (*a*) should not grant to any person or company a licence to use or exercise the said inventions or any improvement thereof for the sale or distribution of Mond gas or any development thereof in the district; (*b*) should not grant a licence to any person or company to manufacture Mond gas or any development thereof for his or their use within the district on more favourable terms than those on which he was for the time being granting licences to persons or companies to manufacture the gas outside the district; and (*c*) should pay to the Company one-half of the money, royalty, or consideration received by him or them in respect of all licences granted for use within the district. The agreement, of course, also provided for the payment to Dr. Mond of 7500 shares of £10 each

Mr. PLUMMER: Which is the section to save section 22 of the Patents Act?

Mr. WALLACE: Now that we have struck out the word "exclusive" it is not necessary. There is no objection to putting in a clause; but it would be superfluous

Mr. GRUBBE (representing the Parliamentary Agents for the Bill) stated that the preamble as amended would now read:—

Whereas the persons hereinafter named (with others) are willing to undertake the manufacture and supply within the parts of South Staffordshire and East Worcestershire hereinafter defined of the producer gas commonly known as Mond gas, and of any development of Mond gas approved by the Board of Trade, and of any other producer gas so approved, for the purposes of motive power and heating, but not of illumination.

Clause 5, entitled "General Objects and Powers of the Company," would run:—

The objects of the Company are to manufacture, supply, sell, and distribute within the South Staffordshire and East Worcestershire district the producer gas commonly known as Mond gas, and any development of Mond gas approved by the Board of Trade, and any other producer gas so approved, for the purpose of motive or other power, heating, or any other purpose to which such gases can be applied, but not of illumination, and to manufacture, sell, and deal in sulphate of ammonia, and any other bye-products or residual products of the said gases, and generally to execute the powers and purposes of this Act; that the general powers of the Company include the erection, maintenance, improvement, letting, and disposal of producers, engines, plant, fittings, machinery, and works of every description, and the acquisition and working of any patents or licences, and the selling or granting of licences to use the same, and the making and carrying into effect of contracts and agreements, and the doing of all acts and things authorized by this Act, or necessary or proper for, or incidental to, the manufacture, supply, sale, and distribution of the said gases for the purposes aforesaid, and carrying into effect the objects of the Company.

The Bill, as amended, was then ordered to be reported to the House.

HOUSE OF COMMONS COMMITTEE.

Thursday, May 9.

(*Before Mr.* CAINE, *Chairman, Mr.* HARMSWORTH, *the Marquis of* HAMILTON, *and Mr.* SHAW STEWART.)

GOLBORNE GAS BILL.

The Bill promoted by the Golborne Gas Company for incorporation with statutory powers came before the Committee to-day.

Mr. RAM, K.C., and Mr. HONORATUS LLOYD appeared for the promoters. Mr. SHAW represented the Golborne Urban District Council, and Mr. BALFOUR BROWNE, K.C., and Mr. DAVIS WILLIAMS, the Leigh Corporation, who petitioned against the Bill.

Mr. LLOYD said the Bill was a comparatively simple one. Golborne was an urban district in Lancashire, in the neighbourhood of the borough of Leigh, whose Corporation were petitioners against the measure. There were 1350 houses in the district, a population of 6789, and a rateable value of £3057. The objects of the Bill were to incorporate as a statutory Company the existing Golborne Gas Company, Limited, give them the usual parliamentary privileges, and place them under the usual parliamentary obligations; and, secondly, to repeal the powers of the Leigh Corporation with reference to the supply of gas in the district of Golborne. In 1855, a Mr. Lawson erected some gas-works in Golborne. This was a private enterprise, having no parliamentary powers; and he supplied a certain portion of the township of Golborne. It was a small affair. Unfortunately Mr. Lawson was not a man of very large capital; and in 1861, when the Leigh Gas Company came to Parliament to be incorporated as a statutory Company, and to be authorized to purchase certain gas-works in the neighbourhood, they included Golborne in their area of supply. One would have supposed that Mr. Lawson would have petitioned against the Bill, in which case he would have been heard; but it was not likely he would spend more than the total value of his works in opposing the Bill, and it consequently passed unopposed. In 1867, certain local gentlemen, being dissatisfied with the small undertaking in Golborne, formed themselves into a limited Company, with the view to giving an increased and better supply of gas. The Company purchased Mr. Lawson's undertaking for the sum Counsel believed, of £850. One would naturally wonder where the Company saw their security for acquiring the gas-works, having regard to the fact that, in 1861, their area was included in the Leigh gas district. But at that time there were no mains of the Leigh Gas Company within a distance of some 3 or 4 miles of Golborne; and therefore the small limited Company felt perfectly secure. Although their district had for six years been included in the parliamentary area of the Leigh Gas Company, this body had taken no steps to supply it. In 1874, three Local Boards—Westleigh, Pennington, and Bedford—in concert obtained an Act by which they were authorized to purchase the Leigh Gas Company's undertaking, which they did. These three bodies were in the following year united in one, and became known as the Leigh Urban District and the Leigh Urban Sanitary Authority. A Committee was appointed to deal with the gas-works; and, in 1876, they took into consideration the question of whether or not they should supply Golborne. At that period the position of matters remained as they had been at the time that the Golborne Company was formed; and the Committee held a meeting, at which they solemnly passed a resolution that they would not extend their service to Golborne. About the same time, an interview took place between the Chairman of the Leigh Gas Committee and the Chairman of the Company he (Counsel) represented, at which the Chairman of the Committee assured the Chairman of the Golborne Company that they had no thought of ever supplying Golborne at all; and the Committee lent to the Company the assistance of their Engineer, to advise in the matter of adding to and improving the works.

The CHAIRMAN: Was that done?

Mr. LLOYD: Yes. Acting upon that, the Golborne Company in the following years—from 1877 to 1880—with the increased sense of security consequent on the assurance of the Chairman of the Leigh Gas Committee, increased their capital, with the view to carry out alterations and bring their works up to date. The capital was actually increased from about £1400 to £3650. By reason of this, and acting upon the advice of the Leigh Gas Committee's Engineer, the Company extended their works, and were able to give a satisfactory supply. In the year 1899, Leigh was incorporated as a borough, and the powers which had hitherto been vested in the Urban and Sanitary Authority were vested in the Corporation, who became the gas authority for the district.

The CHAIRMAN: With Pennington and Bedford included in the area?

Mr. LLOYD: Yes; it was merely an administrative change. Counsel next passed to the year 1900, up to which time the Leigh Gas Authority had never endeavoured to supply a cubic foot of gas in Golborne. In May last, the Corporation were asked to supply a few houses near Lowton Junction—a point between their own borough and Golborne. The matter was considered, when it was decided that they could supply them profitably; and they therefore resolved to do so. No whisper was made of supplying Golborne. In fact, to serve the few houses he had mentioned, Leigh laid a 3-inch main; and, in passing through Lanehead, which was the obvious point at which to branch off for supplying Golborne, they did not even put in what was known as a junction-pipe. In the month of November last, it became known that the Company for whom he appeared intended coming to Parliament, with the view to being put upon a statutory basis and under the ordinary obligations of a gas company. A change then came o'er the spirit of the dream. On Nov. 13, the Gas Committee of the Leigh Corporation recommended the Parliamentary Committee to oppose the measure. On the 17th, the "Gazette" notice of the Company's Bill appeared; and on the 22nd a Local Government Board inquiry was held, with the view to sanctioning a further loan to the Leigh Corporation of money to be spent upon mains. The original application had been for a sum of £3000; but the Town Clerk of Leigh, in putting the case for the loan before the Inspector, said there was another township in the district which had at present not been attached for gas purposes, and to which he thought the Corporation might usefully go. He therefore asked for a further sum of £1500, and said he would subsequently get his Gas Committee to pass a resolution sanctioning the additional amount. On Dec. 23, the Town Clerk of Leigh reported to the Gas Committee that he was instructed to oppose the Golborne Company's Bill; and, curiously enough, it was resolved to lay mains into Golborne. This was the first step the Corporation had taken with the view to serving Golborne. They also passed a resolution that the charge for public lighting should be the same as in their own borough, but that the private consumers should pay 3d. per 1000 cubic feet more. This would appear strange, when subsequent events were considered. At that time, the actual price they were charging was 3s. per 1000 cubic feet, less 3d. discount for prompt payment; and in Lowton they were charging 3s. 9d., less 3d. The Committee decided to supply private consumers in Golborne at 3s. 3d., less 3d. discount; while the local Gas Company were charging 4s., less 4d. In December last, and in January and February of the present year, the three most unsuitable months of the twelve in which to do the work, owing to the short days and frost, &c., the Corporation set to work to lay mains into Golborne. They had already laid a 3-inch main down through Lowton; but they commenced in the middle of Golborne with a 9-inch main. His friend for the petitioners told him they did the same at the other end. At any rate, in Golborne they laid a 9-inch main; but when they came to the London and North-Western Railway bridge, they found they could not take the pipe across it. They therefore dropped it, and continued on the other side. They at length decided to join it up, so put a 6-inch main across the bridge. But another difficulty arose. They were approaching the 3-inch pipe which ran through Lowton, and with which they had to connect; and in order that there should not be too great a jump, they took two strides and put in a 6-inch pipe again to join with the 3-inch. They therefore had Golborne connected with their works by a 3-inch, 6-inch, 9-inch, 6-inch, and 9-inch main; and the Corporation came there and said they were in a position to adequately supply Golborne. They next gave notice, under the Gas-Works Clauses Act, that they were going to break up the streets in order to lay their distributing mains; and they did this. They also sent canvassers round to solicit custom; and at the same time a resolution was passed to charge the same price for gas all round in Golborne as Leigh. Of course, the

Company had to reduce; and they fixed their rate at 2s. 11d. per 1000 cubic feet, with a discount of 3d.

The CHAIRMAN: Then you are cutting each other's throats?

Mr. LLOYD said that was so. The Corporation were charging 3s. per 1000 cubic feet, less 3d. discount. But what he wanted to point out was that from 1861 down to 1900, during which period the Corporation and their predecessors had had power to supply Golborne, they never raised a finger to do so; and not until the Company moved to come to Parliament to be put on a statutory basis, did they commence operations. His clients asked for the powers granted to all incorporated companies and local authorities. They also wanted to raise further capital, because, although their works were sufficient for the present, increased storage accommodation was required; and, besides this, the consumption of gas in the district was increasing, and bade fair to continue to grow. The present capital of the Company was £10,000, of which £7000 had been paid up. The Company asked for £15,000—£10,000 of which would represent the whole capital of the limited Company, and £5000 would rank as additional capital. It was proposed that they should have an initial charge of 3s. 6d. per 1000 cubic feet, with the sliding-scale. The Company would undertake to supply gas of an illuminating power of 15 candles; and provision had been made in the Bill for all the conditions which Parliament usually placed upon statutory companies. In putting themselves under parliamentary obligations, the Company were obtaining some advantages—that was to say, as a non-statutory Company they had no right to break up streets at all. If their works were on one side of the road, and house and shop keepers on the other side were clamouring for gas, they would have to obtain the permission of the authorities before they could lay their main across the street. There were two petitioners against the measure—the Corporation of Leigh and the Urban District Council of Golborne. In the former petition, it was alleged that no public advantage would accrue to the urban district of Golborne by the Bill passing into law; while the interests of the petitioners and consumers within their gas supply area would be seriously prejudiced. They also submitted that, should the preamble be deemed proved, clauses and provisions at present in the Bill which are objectionable ought to be removed, and other clauses and provisions which are absent from the Bill should be inserted for the protection of the petitioners. He had no objection to agreeing that the usual clauses be inserted; and, if they wished, he would include a clause providing that, should the Corporation desire to purchase the undertaking, the fact of their being made a statutory Company should not be held to enhance the value of the concern. Then with regard to the special injury that would be done to the consumers of Corporation gas in Golborne, these consumers had been created since the Company's Bill had been presented to Parliament. The Corporation had fifty customers in the township, and were unable to supply more, owing to their being limited by a 3-inch main. They claimed to be able to supply Golborne at a rate as low as the Company. The Corporation were prevented by statute from charging a differential rate; and if they brought their price in Golborne down to the Company's, they must reduce it all over the district, including the borough of Leigh. This would put an enormous tax upon their resources, if they could do it at all. He had next to deal with the petition of the Golborne Urban District Council, who complained of the Company being given a monopoly by the passing of the measure. There would be no creation of a monopoly; for, until the end of last year, the Company had held the monopoly for forty years. The petitioners asked that, should the Company be granted statutory powers, provision should be made for them, if they considered it in the interests of the ratepayers, to purchase the undertaking. In this instance, also, he had no objection to the insertion of a clause to that effect.

Mr *Frederick Silcock*, Chairman of the Golborne Gas Company, said the prices of gas charged by the Company had been gradually reduced, from the time they took over the business until there was competition by the action of the Corporation, from 6s. to 4s. per 1000 cubic feet. The consumption was steadily increasing. In 1890, the gas made amounted to about 5½ million cubic feet, as compared with between 8½ and 9 millions in 1900; and, of course, there had been a proportionate increase in the amount of gas sold. The Company had 6½ miles of mains; and the supply was confined to the township of Golborne.

In reply to Mr. SHAW, witness said since the Corporation had entered into competition the Company had made two reductions. The charge to private consumers was 2s. 8d. per 1000 cubic feet net, and to large consumers 2s. 6d. net. The present illuminating power was between 17 and 18 candles.

By Mr. WILLIAMS: Of the 1350 houses in the town, the Company supplied 443, as compared with 353 last December. In the latter half of last year, their leakage was 15 per cent.; but they had since had the mains repaired. He attributed the leakage to the shifting of the land, which was common in colliery districts.

In reply to Mr. HARMSWORTH, witness said he had never heard of the Leigh Corporation making any protest against the Company for having taken up a part of their district.

Mr. *Joseph Timmins*, Engineer and Manager of the Wigan Gas-Works, said that from 1874 to 1877 he was engaged as Gas and Water Engineer to the Leigh Corporation. While acting in that capacity, he was instructed to visit Golborne and prepare an estimate of the cost of supplying the town with gas. He did so, and was told not to proceed any further. The year following, he was present at an interview between the Chairman of the Leigh Local Authority and the Chairman of the Golborne Gas Company. The interview had reference to the general supply of Golborne; a number of people having complained of the poorness of the gas. Then, with the permission of the Leigh Gas Committee, he undertook to carry out certain improvements in the Golborne works. Most of his suggestions were acted upon; the Company did enough to increase the pressure and illuminating power. There was no suggestion, at the time the question arose of the Leigh Committee supplying Lowton, of going so far as Golborne. He had prepared an estimate of what the cost would be for the Leigh Corporation to supply Golborne. The figure was £6933, or 1s. 4½d. per 1000 cubic feet of the gas sold.

By Mr. WILLIAMS: It was witness's opinion that it would not pay the Corporation to supply the town at the present prices. He had taken 1s. 6d. per 1000 cubic feet as the cost of production of gas in Leigh, when he said it would not pay.

Mr. *Corbet Woodall* said the Company were in a position to give, and had been giving, a satisfactory supply. The works at present were sufficient for the requirements of the district—in fact, the main portion of the premises was beyond present necessities—but the storage accommodation needed to be increased. An illuminating power of 15 candles was rather a high than a low one for the district. Witness considered it altogether unreasonable, and (if he might be permitted to say it) impudent for the Leigh Corporation, after not exercising their powers for over forty years, to oppose the present measure. He was of opinion that the Corporation did not alter their position because they had managed to scramble into the ground some sort of main.

The CHAIRMAN: If this Bill were not granted, the competition would continue; but it would be impossible for it to go on for any length of time?

Witness: I believe it would be impossible. One or other would be squeezed out—of course, the weaker Company.

The CHAIRMAN: And then there would simply be the one supply as before. Therefore any advantage to the people of Golborne would be merely temporary?—That is so.

In cross-examination by Mr. SHAW, witness admitted it was a little unusual that the amount of £10,000 should be given as original capital if it was not already subscribed; but in this case the amount was subscribed, though not paid up.

Re-examined by Mr. LLOYD, witness said he considered £8000 a fair amount at which to take the original capital.

Mr. LLOYD then said that, with permission, he would amend his Bill, and ask that £8000 should be taken as original capital, and not the £10,000 stated.

Friday, May 10.

Mr. *Thomas Newbigging*, examined by Mr. LLOYD, said he was well acquainted with the Golborne district. In his opinion, the works were well situated. They were in good order, and had been maintained in excellent condition. Part of the works were in excess of the requirements of the district; while other portions—notably the storage capacity—should be extended. The necessity for an extension of storage was due to the growing demand in the neighbourhood.

The CHAIRMAN: I think the Committee are perfectly satisfied that the works are in good order and sufficient for the requirements of the district. It is for the other side to disprove that.

In reply to further questions, witness said it was necessary that additional capital powers should be granted to the Company; and in his opinion the amount of capital suggested was most reasonable. He considered an initial price of 3s. 6d. a most fair one for a small company. The present price of 2s. 11d. per 1000 cubic feet was a competitive one, and was not a proper price to take as a regulation charge. The provisions of the Bill with regard to illuminating power and the testing of the gas were quite in accordance with the usual parliamentary requirements. It was a little difficult, in his opinion, to understand the position of the Urban District Council, who, though they wished to purchase the undertaking, yet favoured competition. It was certainly in their interests that the competitive powers held by the Leigh Corporation should be repealed. The Corporation had had Golborne within their gas area for many years, and not only had they done nothing towards supplying gas, but they had given an assurance that they would not supply Golborne. As soon as they obtained a knowledge of the presenting of the Company's Bill, they laid mains and commenced a supply—a proceeding which did not commend itself to him as being a ground for placing upon their petition the statement that they were supplying the town. December, January, and February were not months in which a prudent gas engineer would lay mains. The mains the Corporation had laid were entirely inadequate. A 14-inch main was necessary to supply the town and places on the way. The whole thing appeared to have been done in a hurry—in fact, it was to make believe they were supplying the town, and in order that they might be in a position to tell the Committee so with truth. The Company would be unable to survive competition with the Corporation; and, of course, when the competition ended, the Leigh Corporation would be free to charge what they liked, up to the 6s. per 1000 cubic feet allowed by their statute.

By Mr. SHAW: Witness did not consider that 3s. 6d. per 1000 cubic feet was a high initial price, even for a town in a coal district. In his opinion, it was a reasonable standard for a company of this size.

In reply to Mr. WILLIAMS, witness said the Company could never compete with the Corporation, with the rates at their back. He had received his information of the Corporation having given assurances that they would not enter Golborne from Mr. Timmins.

By the CHAIRMAN: Through a 14-inch main 8800 yards long 16 142 cubic feet of gas would pass per hour. Through a 9-inch pipe, the amount passing per hour would be 5358 cubic feet. The latter quantity would supply a town having a population of 12,000 to 15,000. He was counting upon an initial pressure of 10-10ths.

The CHAIRMAN: Well, we are quite satisfied that a 9-inch main would supply Golborne.

Witness said it might do so at present; but it was not wise to put down pipes sufficient only to supply exactly the necessary quantity.

In re-examination by Mr. LLOYD, witness said though the Corporation were not entitled, on their own admission, to charge a differential rate, they had done so in various parts of the district; and he was of opinion they ought to refund the money. He considered it was obvious, from the fact of the Corporation having lent their Engineer to the Golborne Company, to advise as to certain improvements in the works, that the Leigh Corporation had no intention of competing.

In reply to Mr. HARMSWORTH, witness said the Golborne Company was very economically run. When private companies and corporation concerns were equally well managed, the rates they charged did not materially differ; but, as a matter of practice, a corporation did not supply at a lower price than a company. He did not think the Golborne District Council would be able to supply gas cheaper than the present Company did.

The case for the Bill being thus completed, the following witnesses were called for the Golborne Urban District Council.

Mr. *John Robinson*, a member of the Council, said an important section of the Haydock Collieries (of which he was Manager) were situated in the centre of the Golborne district. The Council desired that the competition in the gas supply might be continued, as they were afraid if there were no competition the Company would go back to their old charge, and perhaps even make it higher. The price charged at present would be a reasonable one to fix as the standard.

By Mr. LLOYD: He personally was not in favour of the purchase of the undertaking by the Council, and he did not think the Council as a body desired to take over the works. So long as the gas was supplied as cheap as now, they did not desire to buy the concern.

The CHAIRMAN: Do you wish a clause inserted in the Bill providing for purchase.

Witness: In the event of your granting the Company statutory powers, we do.

Mr. LLOYD: And yet you want the competition to continue.

Mr. SHAW then stated the case for the Council. He suggested that this was rather a unique condition of affairs. Here was a limited liability Company, who went into a district, subject to the risk of competition, at the mercy of the Leigh Corporation, who had powers to enter the district, and were also liable to be turned out by the District Council, who could at any rate prevent them taking up the streets to lay their mains. It was in the fear of this, no doubt, that the Company had applied to Parliament to be put in a statutory position, because as soon as ever the Leigh Corporation moved into the neighbourhood, notice was put in of this Bill.

Mr. RAM: It is quite the other way round, as we proved yesterday.

Mr. SHAW-STEWART: I think we have it the other way.

The CHAIRMAN: Yes; that is so.

Mr. SHAW (continuing) said it had been claimed that the Golborne Company had supplied gas to the satisfaction of the inhabitants; but, he submitted, it was proved that complaints were continually made.

The CHAIRMAN: Those were complaints as to price, not as to quality.

Mr. SHAW said the Company were charging 4s. per 1000 cubic feet in a coal district; but as soon as competition entered, they reduced the price by 1s. The District Council, in the interests of the ratepayers, did not want to lose the motive power that had forced the price down. It was quite true, he admitted, that the cutting competition could not go on; but so long as there was a possibility of competition, the price could not go back to its old figure. Therefore they wanted to keep alive this competition; and they also wished the standard price put at a reasonable figure. He thought even Mr. Woodall had said the standard of 3s. 6d. per 1000 cubic feet was a little high, having regard to the price now charged. It was a good deal too high. In a district such as that with which they were dealing, where there was good gas coal, and looking at the fact that the Company were asking for only 15-candle power, 3s. per 1000 cubic feet as a standard was ample. He would ask the Committee, having regard to the district being a colliery one, and in consideration of the Company having charged such high prices in the past, not to put into the Bill a higher standard than 3s. The purchase clause was desired as a kind of protection to the Local Authority.

Mr. WILLIAMS said he would like to call evidence for Leigh; leaving the statement of the case to his learned friend Mr. Balfour Browne.

Mr. *P. Thomas*, Town Clerk of Leigh, said he knew nothing of the resolution stated to have been passed by the Corporation in 1876 relating to the supply of gas to Golborne. He had gone through the minute-books of that year, and could find no reference to Golborne at all. The Corporation had received no request from the inhabitants of Golborne to supply them with gas. They ran mains there purely on their own initiative. The gas-works at Leigh were sufficient to cope with the whole of the district, including Golborne.

The CHAIRMAN: You say you have sufficient plant to supply the whole district; but is not Leigh increasing in population very rapidly?

Witness: There has been an increase of 9000 in ten years.

In reply to Mr. WILLIAMS, witness said it would not be necessary for the Leigh Corporation to take over the Golborne gas-works, or to manufacture gas in Golborne, in order to supply the district.

By Mr. RAM: The Corporation first took action to supply Golborne at the end of last year, after notice had been given of the presentation of the Company's Bill. In November, 1875, a Committee was appointed by the Corporation to inquire into, and report on, the question of supplying Golborne with gas. There was no record in the minute-book of any report having been made.

In answer to Mr. RAM, witness said it came to his knowledge in 1897, shortly after he became Town Clerk, that Golborne was within their gas supply area. He informed the Gas Committee of the fact: but there was no record of it on the books.

Mr. *John Foster*, Gas Engineer to the Leigh Corporation, was next called. Counsel was proceeding to examine him with regard to the capacity of the Leigh works, when

The CHAIRMAN remarked that it might be taken for granted that the Leigh works were capable of supplying Golborne.

Witness said £3000 had already been spent in connection with the Corporation's movement to supply Golborne. He thought for a further £1200 they could meet all the requirements of the town. The cost of their gas, delivered to the consumer's meter, in 1900, was 14·8d. per 1000 cubic feet, notwithstanding the high price of coal. The gas they supplied was of 18½-candle power.

In reply to Mr. HARMSWORTH, witness said the Corporation could supply Golborne with gas at 2s. 9½d. per 1000 cubic feet, and make a profit. He did not see how the Golborne Gas Company could supply it cheaper than the Corporation.

Mr. *E. Herbert Stevenson*, examined by Mr. BALFOUR BROWNE, said he had inspected the district of Golborne, but was refused admission to the gas-works. The works of the Leigh Corporation were adequate in every way to supply Golborne without any further expenditure, except on mains; and £1200 would cover this. The predecessors of the Leigh Corporation bought the gas-works for £48,000, which was 25 years' purchase of the maximum dividend. He considered it would be rather hard on the Company that the Corporation should enter into competition now.

Mr. HARMSWORTH: Would you regard it as just that the price to be paid by the Leigh Corporation should be fixed by arbitration?

Mr. BALFOUR BROWNE said the Leigh Corporation would be quite willing to buy out the Company upon arbitration terms.

The CHAIRMAN, after some discussion had taken place, proposed an adjournment, to afford an opportunity for the parties to come to some agreement.

Mr. SHAW said that, provided the Golborne District Council received a guarantee that the consumers there should not be charged more than those in Leigh, he was willing to assent to the suggestion.

Monday, May 13.

Mr. RAM said that, since the adjournment, letters had passed between the parties; the promoters of the Bill offering to sell their undertaking for £11,500—the Leigh Corporation taking over all liabilities—or, as an alternative, to submit the matter to arbitration, the Company to be regarded in that case as a company without opposition and non-statutory. The Corporation, however, would not agree to look upon the Company as without competition, but as supplying gas within the statutory limits of the Corporation of Leigh. Mr. Ram submitted that the Company ought to be looked upon as, in fact, the sole purveyors of gas in Golborne, and that they should not be treated, if the matter went to arbitration, as though the Leigh Corporation had ever been in competition.

The CHAIRMAN: I think we may at once say that we shall treat you as the sole gas-supplying body in Golborne. We give you the preamble.

Mr. BALFOUR BROWNE said that was not the fact. The Leigh Corporation were already supplying consumers in Golborne.

The CHAIRMAN: We shall treat you as filibusters.

Mr. BALFOUR BROWNE submitted that the Corporation were supplying Golborne by their statutory rights; and the Committee were repealing those rights without compensation. The Corporation had spent money in laying mains, and had fifty customers. The Golborne Company only wanted to be bought out.

The CHAIRMAN did not think there had been any evidence of that.

Mr. BALFOUR BROWNE (continuing) said he was quite willing to give the Company fair consideration for their works. But he could not buy without making inquiry as to their value; and he objected to their being regarded as without competition.

The CHAIRMAN: They were without a competitor until within a moment of the presentation of the Bill. You were only potential opponents, and were not near their district

Mr. BALFOUR BROWNE pointed out that the Corporation had the right to be treated as a competitor. There were, he contended, two possible competitors against the Company—the Leigh Corporation and the Golborne District Council, who had power to supply gas within their own area. He concluded by stating that, if the Committee did not recognize the powers of the Corporation to compete, he would go somewhere else and see what he could get there.

Mr. RAM maintained that the Leigh Corporation had entered into competition since the presentation of the Bill, and simply and solely with the object of thrusting the Company down. The Golborne District Council could not supply gas so long as there was another body supplying there. As to the mains laid in the township of Golborne, the Company would buy them at the price they were worth.

Mr. BALFOUR BROWNE: And the main that supplies them from Leigh is to be left on our hands.

Mr. RAM: Certainly, because you put that down to squeeze us out.

The CHAIRMAN: The only point appears to me to be as to whether the words "without a competitor" shall remain in the clause.

The room was then cleared. On the re-admission of the public,

The CHAIRMAN announced that the Committee were entirely agreed that they were prepared to grant the preamble, regarding the Company as without a competitor.

Mr. BALFOUR BROWNE: Then I reserve my case for elsewhere.

Mr. SHAW raised the question of the standard price; and it was agreed that it be fixed at 3s. per 1000 cubic feet net.

Some discussion next took place as to the borrowing powers of the statutory Company. The original paid-up capital was declared at £8000, with £7000 additional; and on this total (£15,000) the dividend was fixed at 9 per cent., power being granted to borrow a further £5000 on debenture stock.

Thursday, May 16.

The Bill was again brought before the Committee to-day, when the clauses as amended were formally gone through and passed. The Bill was ordered to be reported to the House for third reading.

HOUSE OF COMMONS COMMITTEE.

Thursday, May 16.

(*Before Sir* HENRY FLETCHER, *Chairman, Mr.* STRACHEY, *Mr.* MORRIS, *and Mr.* TOMKINSON.)

METROPOLITAN WATER COMPANIES (AMENDMENT OF ACTS) BILL.

This Bill, which is to extend the provisions of the Staines Reservoirs Acts of 1896 and 1898, in so far as it relates to the purchase of the undertakings of certain Metropolitan Water Companies by a public body or trustees, came before the above-named Committee to-day.

Mr. BALFOUR BROWNE, K.C., and Mr. FREEMAN, K.C., appeared for the promoters, the London County Council; while Mr. POPE, K.C., Mr. PEMBER, K.C., and Mr. F. W. PEMBER represented the petitioners against the Bill—the Staines Reservoirs Joint Committee.

Mr. FREEMAN, in opening the case, referred at some length to the various Bills, Committees, and Commissions which have dealt with the Metropolitan Water Supply during the past few years. He pointed

out that, in 1895, eight Bills were introduced by the London County Council for the purchase of the undertakings of the Water Companies, and that in the proceedings in Committee in connection with these Bills (which were brought to an end by the dissolution of Parliament) the principle was pretty well recognized that purchase was a desirable thing. In 1896, the Staines Reservoirs Act was passed; and in view of the contention of the London County Council that it was extremely undesirable that further powers should be given to the Companies concerned in that measure, so as to increase the selling value of the property in case of purchase, a sinking-fund clause and a "sterilization" clause (No. 84) was inserted. The latter provided that if the undertaking of any of the three Companies should be acquired otherwise than by agreement, within seven years from the passing of the Act, by any public body or trustees, nothing contained in that measure should authorize the Company to bring into account, or to make any claim in respect of, any advantages conferred upon them by, or resulting from, the passing of the Act. The Act obtained the Royal Assent on Aug. 14, 1896, and therefore the period of seven years would expire on Aug. 14, 1903. The Staines Reservoirs Act of 1898 conferred further powers upon the Joint Committee; and in that Act it was directed that section 84 of the Act of 1896 should have effect as if it had been enacted with respect to the Act of 1898. Similar provisions were inserted in a number of Acts relating to other of the Water Companies; but as these Acts were passed in different years, the date when the period of seven years would expire varied in each case. The next point was with reference to the last Royal Commission (Lord Llandaff's) on the Metropolitan Water Supply, who, in their first report, recommended the carrying out of an intercommunication scheme. They said it had been urged by the County Council that this scheme might increase the value of the Companies in the event of purchase by some public authority; but they doubted whether this apprehension was well founded. They thought, however, that all doubt on the subject should be removed, and that a clause similar to section 84 of the Act of 1896 should be inserted in any Bill by which an intercommunication scheme was sanctioned. Such a Bill, with a clause of the kind suggested, was brought in in 1899, and passed. Subsequently, the Commissioners made their final report, in which they came to the conclusion that it was in the public interest that the undertakings of the Metropolitan Water Companies should be acquired by some representative body; and, if that could not be done, they proposed certain measures of control and regulation. The whole object of the present Bill was to enact that the powers which the Joint Committee obtained, and the limitation put upon them in the sterilization clause, should be extended so as to be coterminous with the period mentioned in the Act of 1899, and thus secure uniformity of procedure; Parliament having recognized the principle that further powers and works authorized should not give additional advantage to the Companies. When clause 84 was inserted, it was anticipated that purchase would have taken place in the seven years. There had been considerable delay. This, however, was not in any way due to those who desired to be the purchasing body, but to some complicated causes. The action of the Government, and the view which the House of Commons had taken from time to time of various proposals of the London County Council, were each partly responsible. Mr. Long, the President of the Local Government Board, in reply to a deputation from the Council which brought this matter under his attention in December last, said these sterilization clauses had now been put in all Bills as they came forward; and he thought it was obvious that, if they expired before purchase was completed, something must be done to deal with the matter satisfactorily. He should therefore carefully consider the suggestion that the date should be made the same in regard to all the Acts. This was all the Council were now asking for—that all the sterilization clauses should be brought into line and that the whole object for which they were instituted should not be defeated by the fact that some time had elapsed before the purchase could be effected.

The CHAIRMAN: What is the extension of time asked for?

Mr. FREEMAN: Three years.

Mr. POPE: They propose to extend the Staines clauses to 1906. They at present expire in 1903; and so they allow two years for the development of the Government policy.

Mr. FREEMAN: All the other Water Companies' clauses expire after 1906.

Mr. POPE: No. The Southwark, Lambeth, and East London Companies do not.

Mr. FREEMAN said the clause in the Act in question would expire in 1903, and the Bill would extend it to 1906. If this were not done, there would be a failure of justice, because the Government Bill could not be introduced, at the earliest, until next session. Then it had to be considered, and it would be fortunate if it passed in the succeeding session. After this the purchase would have to be referred to arbitration, which, in this case, would occupy a considerable time. Therefore, unless the operation of the clause were extended as suggested, the transfer would not be effected while it was in force. The chief objection to the Bill was, he believed, that it was brought in by the County Council. The Joint Committee, in their petition, said the report of the Llandaff Commission, taken as a whole, showed that the Commissioners had no intention of making, and did not make, any unqualified or general pronouncement as to the desirability or the reverse of the acquisition and management of the undertakings of the Water Companies by a public authority. Counsel, however, read the pertinent parts of the report, and said that if it was not in favour of purchase he did not know what was. He agreed that the Commission said that the Council should not be the purchasing or managing authority; but, whatever body purchased, London must be largely represented upon it. The real gist of the petition was in the submission that, having regard to the recommendation that the Council ought not to be the purchasing or managing authority, the Council had really no excuse for further meddling with the question of the purchase of the Companies' undertakings, and that their action in introducing the Bill was utterly unjustifiable. Such action, they held, was only explicable on the supposition that it was a continuance of the policy which had been adopted by the Council throughout in relation to the question of the London Water Supply, which had been to harass the Companies by the introduction, session after session, of legislative projects having for their object either the expropriation of the Companies on unfair and confiscating terms, or the injury and prejudice of those bodies, their property, rights, and interests, in the hope of thereby depreciating the value of their undertakings in view of a possible purchase. He need hardly say that this was absolutely untrue, and, on the face of it, childish. The petitioners further alleged that the mere introduction of the present Bill, and still more its passing into law, would cause uneasiness with respect to the position of the holders of Staines Reservoirs Committee's guaranteed debenture stock, and so depreciate its value; and, further, that such uneasiness would militate strongly against the success of a further issue of the stock which was about to be made. The President of the Local Government Board had intimated the intention of the Government to introduce in 1902 a Bill to deal with the whole question of the water supply of London. In the event of a Government Bill to authorize a public authority to acquire the undertakings of the Companies being sanctioned, there would be ample opportunity, during its discussion, to include in it such provisions as were contained in the Bill, if Parliament thought them just and expedient; and therefore the petitioners submitted there was no necessity or justification for the introduction of the present measure. Counsel pointed out, in conclusion, that all the promoters were doing was endeavouring to prevent the power referred to lapsing; and why the petitioners should get so excited about it he did not know, except that it was the County Council who had introduced the Bill.

Friday, May 17.

On the resumption of the proceedings this morning, evidence was given in support of the Bill.

Mr. *M'Kinnon Wood*, examined by Mr. FREEMAN, said he had been a member of the London County Council for some years, and was Chairman of the Water Committee of that body. He described the attempt made by the Council to purchase the undertakings of the eight Water Companies in 1895; pointing out that though the Select Committee presided over by Lord Rathmore (then Mr. Plunket) in that year accepted the principle of purchase, no decision was arrived at, owing to the dissolution of Parliament.

Mr. POPE remarked that the principle was accepted by reason of the Committee proceeding on the lines laid down by Sir W. Harcourt's previous Committee. The Water Companies had not given evidence on the subject.

Witness said the details were not considered, nor had the evidence of the Companies been given. The New River, Grand Junction, and West Middlesex Companies promoted the Staines Reservoirs Bill in 1896; and a clause was inserted declaring that, if purchase was effected within seven years, the Companies were not to claim any advantage or benefit in respect of those reservoirs. The seven years would expire in 1903. This clause had been inserted in five or six subsequent Acts—practically the same words being adopted in each case. The fact of its having been so often accepted showed that it was a fair and reasonable clause. It was suggested by the County Council and adopted by the Water Companies.

Mr. POPE: But not willingly.

Witness went on to say that the Council, as representing the ratepayers, thought it necessary to take steps to safeguard their interests, in view of the repeated delays which had taken place in bringing the purchase question to a head. Though the President of the Local Government Board had promised to introduce legislation on the subject next year, his promise was a qualified one. But even if a Bill passed next year, it was not at all certain, or perhaps even probable, that the purchase would be completed by the time the sterilization clauses would lapse. The duty of the Council was to see that the ratepayers were not damnified by such an event. The Council had had an interview with Mr. Long, in the course of which the sterilization clauses were referred to. Mr. Long had said that they ran in the various Acts from 1903 to 1906; and he would consider the desirability of having a similar date for all of them. The suggestions he then made were the same as those contained in the Bill before the Committee. These clauses in the other Acts would lapse after 1906—two in 1907 and one in 1908, the latter being the case of the Southwark and Vauxhall Act. The clause in the Staines Reservoirs Act would lapse before 1906, and the Council wanted to bring it up to that year, so as to make the clause coterminous with those in other Acts. The Council were only asking the Committee to continue the policy Parliament had pronounced in all the recent London Water Acts.

Mr. POPE (in cross-examination): Supposing purchase does not take place in 1906, will there have to be a further extension of the sterilization clause?

Witness: I would rather leave that question to be answered when the contingency arises. It is a hypothetical case. I cannot conceive that purchase will be put off to beyond that period.

I insist upon having a direct answer. In your judgment, if the purchase is not completed until 1906 (though it is now a settled policy), do you think the sterilization clause should be extended?—I would appeal to the Committee whether I am bound to answer that question. I think I have given a sufficient answer.

Mr. POPE pressed his question.

The CHAIRMAN (having consulted his colleagues): The Committee think that as it is a hypothetical question, it would be better not to press it. It is difficult for the witness to answer it.

In further cross-examination, witness said the clause in the Act of 1896 was limited to seven years; and by clause 43 of the same measure the period within which the works authorized were to be completed was also fixed at seven years.

Mr. POPE: And do you recollect also that by section 61 of the same Act, after the same period of seven years the whole status of the matter was to be altered by the Companies, on the completion of their works, at the commencement of taking water, paying to the Thames Conservancy £2500 a year, and paying over to the City Chamberlain a sum in the shape of a sinking fund. So that there was to be sterilization during the period that the works were in progress, and at the end of that period freedom from the operation of the clause?

Witness: That was simply a coincidence. The dates happened to be the same, but nothing was put before the Committee.

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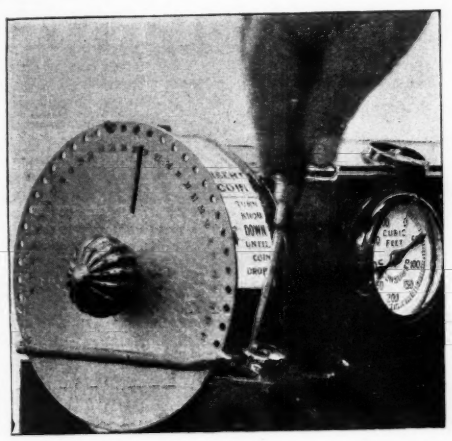

Fig. I.
Break Company's Seal and Remove Screw—THUS.

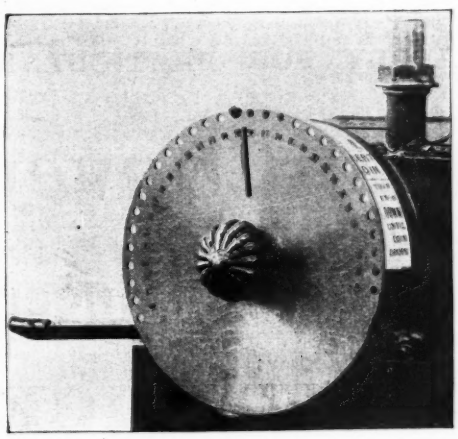

Fig. II.
Swing Band Back—THUS.

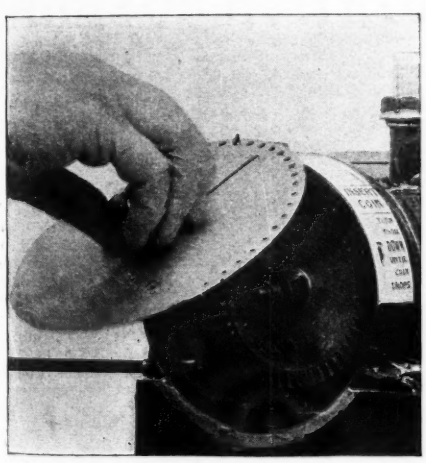

Fig. III.
Lift Plate Off—THUS.

Fig. IV.
Replace Plate—THUS.

Swing Band Forward—Replace Screw—and Re-seal.

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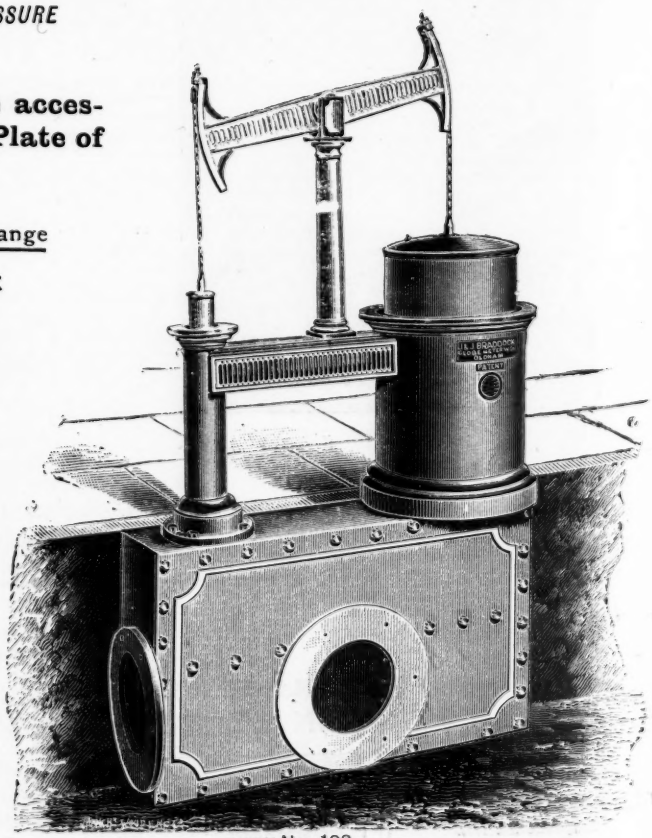

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works?—No. There was an Act in which there were no works provided for, and yet in that measure the clause was inserted.

Mr. FREEMAN: In the Lambeth Act, I think, the clause was for seven years, while the works were only to occupy two years.

Mr. POPE asked witness if the clause was not to have effect until the sinking-fund came into operation, this being the view of the Royal Commission.

Witness replied in the negative. He said the sinking fund ceased to exist if purchase took place; but the sterilization clause would benefit the ratepayers in that event. The Royal Commission had not said that the sinking fund was to have the same effect as the sterilization clause.

Reference having been made, both in the examination-in-chief of the witness and in his cross-examination, to the statement of Mr. Long at the interview he had with the representatives of the County Council on the Water Question, an extract from the report of the proceedings bearing upon this matter was read by Counsel.

In re-examination by Mr. FREEMAN, witness said the Government had opposed the Bill promoted by the County Council this session for the purchase of the undertakings of the Water Companies; but the present measure had not been objected to.

Mr. *H. L. Cripps*, Parliamentary Agent to the Council, examined by Mr. BALFOUR BROWNE, said the sterilization clause had been drafted by him in 1884. Mr. Pope held that it should be binding only during the period allowed for the completion of works; but he (witness) had understood that it should be in force for the period specified in the Act, irrespective of the completion of the works. Such a condition as the period required for the completion of the works seemed never to have been mentioned or discussed before any of the Committees in relation to the clause; and it certainly had never been taken into consideration by anyone who was responsible for proposing it. He had never heard it suggested until now.

This was the case for the promoters.

Mr. POPE then addressed the Committee for the petitioners. He said the introduction of the Bill was an ill-advised proceeding on the part of the County Council, and would inflict injustice upon the three Companies constituting the Joint Committee. The original Bill, as deposited, would apply to all the Companies alike; but the promoters had now thought it desirable to confine the measure to the Staines Reservoirs Act. It was a rule that the intentions of Parliament could only be read in its Acts. It was not the legal form of dealing with such matters to ask the Committee to receive evidence as to what Parliament had or had not intended by certain legislation other than that contained in the Acts. They could see in the sterilization clause what the intention of Parliament was—namely, to prevent the new capital authorized to enable a company to discharge their statutory duty from being made an element in the claim for increased price in the event of the water undertakings being purchased. The draftsman of the clause seemed to have been careful to confine it within the period during which the works were in progress, and for the protection of the ratepayers. After the works were completed, a sinking fund clause was inserted. It would be manifestly unfair that these two schemes should operate at one and the same time. Parliament had provided that they should not do so, but that when one lapsed the other should come into force. The restriction of the sterilization clause was a strong one to put on the Water Companies, and was a thing which had never been applied to any other industry in the country. Though the proposed extension would not work a large amount of pecuniary injustice, it would do some. When the seven years expired, they would be bound to pay to the Chamberlain's sinking fund, with the very object of preventing the capital employed in the new works from contributing to the undertaking during the extension period—the object with which they had the sterilization clause. The security would remain the same, but the clause would lower the market price, just as "wars and rumours of wars" caused the value of Consols to decrease. It would disturb the confidence of the public in the investment, and would be a breach of the parliamentary agreement on the strength of which the Companies interested had spent £1,200,000. He failed to see any ground on which the promoters could claim to alter the arrangement. The Companies had performed their duties satisfactorily; no faults on their part could be proved. The Government intended to introduce a Bill next year to deal with the whole question; and the President of the Local Government Board had promised to bear in mind all the arguments that Mr. M'Kinnon Wood had brought to bear. Why, then, could not the matter be allowed to rest—at all events, until they saw whether or not the Government threw the matter over?

Mr. TOMKINSON: You contend that it would be a hardship that the Companies should be at one and the same time subject to the sterilization clause and prevented by the sinking fund from obtaining any benefit from the expenditure of additional capital?

Mr. POPE said the sinking fund accomplished the very object of the clause. When it was in operation, the Companies could not claim an additional price for their undertakings by reason of the expenditure of this new capital.

Mr. TOMKINSON: You do not look upon the amount of money in the sinking fund as lost?

Mr. POPE: No; it is put by for a certain purpose, but never comes back to us. It is handed over to the Chamberlain of the City of London for the express purpose, if it becomes large enough, of paying off the whole of our capital. We cannot get a larger dividend through it.

The Committee deliberated for a few moments in private. On the readmission of the public,

The CHAIRMAN announced that the Committee found the preamble of the Bill proved.

The measure was accordingly ordered to be reported for third reading.

Water Gas in London.—The London County Council, at their meeting on Tuesday, agreed to the recommendation of the Public Control Committee, referred to in the "JOURNAL" last week (p. 1396), that the gas supplied by the three principal London Gas Companies should be specially tested with the view of ascertaining what proportion of water gas is added to the ordinary gas.

LEGAL INTELLIGENCE.

Compensation for Minerals under Reservoirs.

In the King's Bench Division of the High Court of Justice last Wednesday, before Justices Ridley and Phillimore, a special case was stated for the opinion of the Court by Mr. R. F. M'Swinney, the Umpire appointed in certain arbitration proceedings between the parties concerned. It set forth that on the 2nd of September, 1898, the Bwllfa and Merthyr Dare Steam Collieries (1891), Limited, the lessees of mines and seams of coal under certain farms, and beneath a portion of a reservoir belonging to the Pontypridd Water-Works Company, authorized to be constructed by their Act of 1892, and also within a distance of 40 yards from the reservoir on the east side, gave notice to the Company that they intended to work the last-named seams, and to commence doing so after the expiration of 30 days from the notice, unless in the meantime the Company signified their willingness to make compensation. On the 15th of October, the Company intimated their willingness to make compensation, as they required the coal underneath the reservoir to be left unworked. The Coal Company then claimed £6084 for the mineral so left, which sum the Water Company refused to pay; and two Arbitrators were appointed, under the Lands Clauses Consolidation Act, 1845, in order to determine the amount—Mr. M'Swinney eventually being appointed Umpire. Coal rose in value subsequent to the date of the notice, and during the reference the Coal Company claimed that, in consequence of such rise, the compensation to be paid to them should not be assessed on the basis of the knowledge possessed of the value of this particular portion of the coal at the date of the notice, but on the value subsequently acquired. The Coal Company claimed that, according to the second alternative, they were entitled to receive from the Water Company as compensation the sum of £10,016, or, less royalties, £9963 net, which included 10 per cent. to be allowed for compulsory purchase. The question for the Court was whether the Coal Company were entitled to have the compensation assessed according to the first or the second alternative. The Umpire had decided that they were entitled to £2950 compensation on the first, or £5650 on the second alternative. Mr. Abel Thomas, K.C., M.P., and Mr. Denman Benson appeared for the plaintiffs; Mr. Francis Williams, K.C., and Mr. Trevor Lewis represented the Water Company. After hearing the arguments, their Lordships held that compensation was payable on the second alternative; and they accordingly gave judgment for the plaintiffs for £5650, with costs.

The Storage of Calcium Carbide.

At the Haywards Heath Petty Sessions yesterday week, Mr. J. B. Williams, an engineer, was summoned at the instance of the Cuckfield Rural District Council for storing a greater quantity of carbide of calcium on his premises than was allowed without a licence. Defendant had an installation of acetylene gas lighting both inside and outside his establishment; and an Inspector under the Petroleum Act found that he had about 130 lbs. of calcium carbide stored in one large vessel, while not more than 5 lbs. in separate vessels of not more than 1 lb. each could be kept without a licence. Defendant was fined £1 and 10s. costs; and the carbide and receptacle had to be forfeited, in accordance with the Act—the Magistrates having no discretion in the matter.

A Fire Hydrant "A Terrible Trap."

At the Longton County Court last Tuesday, Arthur Miklin, a motor man in the employ of the Potteries Electric Traction Company, was awarded £40 damages and costs for injuries sustained by falling over an open fire hydrant box, at the corner of Temple and Church Streets. The defendants were the Staffordshire Potteries Water Company and the Fenton District Council. The defendant caught his foot in the box, and seriously injured his ankle and knee. Other complications supervened. It was shown that the hydrant boxes were the property of the District Council, and were attended to by the Water Company on behalf of the Council. After a lengthy hearing, the Judge came to the conclusion that the hydrant had been packed with hay and salt, for the purpose of keeping out the frost, by inexperienced men in the Water Company's employ, and that the men left the lid of the box improperly placed. He gave judgment, as stated, for £40 and costs against the Company; and with regard to the Council, he gave judgment for them, but without costs. He added that he thought if there had been any such contingency as the insolvency of the Water Company, the Council would have been liable. One of the hydrant boxes was produced in Court; and his Honour described it as a terrible trap with the lid off in the centre of a footpath.

Disputed Consumption under the Penny-in-the-Slot System.

At the Lambeth Police Court last Tuesday, Mr. Hopkins had before him a summons taken out by the Gaslight and Coke Company to recover 14s. 7d., being the amount undercharged to one of their consumers—a woman in poor circumstances, living in Lambeth. About the end of last year, the defendant, an old lady, arranged with the Company to have the gas laid on to her place of abode. A penny-in-the-slot meter was fixed, but it proved defective. A second meter also proved incorrect, with the result that excessive gas had been supplied to the value claimed. The defendant declined to pay the amount demanded, on the ground that when she dropped her pennies through the slot there was an end to the matter. She had, however, signed a contract with the Company, which provided that if there was any defect in the working of the automatic arrangement of the meter the consumer should be chargeable with the quantity registered by the index. Mr. Hopkins said he thought people who had automatic meters and put their pennies in were justified in assuming that they had paid for all the gas they had consumed. Eventually, an order was made requiring the defendant to pay the amount claimed. It was understood, however, that the Company would show her every consideration, and accept the payment by easy instalments.

MISCELLANEOUS NEWS.

THE CORK GAS STRIKE.

The strike at the Cork Gas-Works last Friday week has been a serious thing for the city. The cause of the dispute appears to be that the Manager of the works (Mr. M'Grath) made what seems on the face to be the reasonable request that, in order to secure proper carbonization, the retorts should be charged with an additional few shovelsful of coal over the quantity that the men have been accustomed to put into the retorts. The men's version of the cause of the dispute is that an agreement was drawn up between them and Mr. Travers, the late Manager, to work No. 4 retort-house, each man to carbonize 2 tons 13 cwt. of coal, thus making 10 tons 12 cwt. for a gang of four men. They state that Mr. M'Grath wanted them to break the contract by charging the retorts with more coal; he stating that they were not carbonizing their usual amount. The men give this as an instance: A man is employed to wheel coal from one side of the house to the other side; and he very often has to wheel 118 barrows of coal with 2 cwt. on each barrow when his complement is 106 barrows. On the evening preceding the strike, Mr. M'Grath ordered the men to charge the retorts according to their heats; but the men said they would put in the usual charge. "If," say the men, "we carbonized extra coal, we would deprive other men of earning a livelihood." The Manager asked four men individually to charge the retorts with extra coal; and as they declined, they were instantly dismissed. In sympathy with the four, the other men refused to resume work except the dismissed men were reinstated. Mr. M'Grath states that about 30,000 tons of coal are weighed in the year, and sent straight into the retort-house. The quantity of coal given to each man is checked every day; and the weekly return shows the amount each has carbonized. It was to prevent the ascension-pipes becoming blocked that he asked the four men to put in a few extra shovelsful of coal, which would be very little in comparison with the large amount of coal they would be short in carbonizing. The men refused to do this; and the Manager said he could have no business with them, if they did not obey his orders. Hence the strike. Recognizing the gravity of the situation, the Manager asked the carpenters, fitters, yardmen, and carmen to assist in stoking at the retorts and do other work. These men refused, and left work as a mark of sympathy with the stokers. Thus there were over 100 men out. About twenty men engaged in the other mechanical portions of the works refused to leave; and they worked till Saturday morning, when they went home as usual. They returned at the regular hour on Saturday night. Meantime, preparations had been made for boarding them inside the works, pending a settlement of the dispute.

The supply of gas, after the men left work, was not long in becoming exhausted, although Mr. M'Grath and his clerical staff made almost superhuman efforts to keep up a supply. Their reward was not so great as they could have desired. In consequence, the city was thrown into darkness; local industry and trade was much affected; and considerable inconvenience generally was experienced. This state of things continued up to Saturday night, when nine or ten men arrived from the Wexford Gas-Works; and the situation thenceforward began to improve, though on Monday night the gas was still being supplied at low pressure. Four extra hands arrived from Dublin in the small hours of Tuesday morning; and the improvement continued.

On Monday evening, the Lord Mayor (Alderman Fitzgerald) attended a meeting of the strikers and offered, if the Gas Company and the men would allow him to act as mediator, to try to effect a reconciliation. The men showed their confidence in the Lord Mayor, by leaving to him the settlement, if possible, of the matter in dispute. The next day his Lordship had an interview with the Directors; but there was no immediate result, as the Directors required a little time for consideration. The following day it became known that they had declined his services as arbitrator; and the outlook was not so encouraging. Summonses were issued against eight of the men for leaving work without notice; and the charges against them were heard on Thursday—judgment being reserved for a week. The new hands at the works were supplemented by six fresh arrivals from Mallow.

THE SUBSIDENCES AT THE TYLDESLEY GAS-WORKS.

Improvements in the Plant.

Few gas undertakings in the country have caused so much anxiety to their owners of recent years as that of the Tyldesley (Lancs.) Urban District Council. For some time the Council have had to cope with mining subsidence, which has damaged the holder to such an extent that, as briefly mentioned in the "JOURNAL" last week, notice had to be issued warning the public of the danger of leaving lights burning during the night, as the supply might fail at any moment. The state of the holder and the suspected faulty condition of the mains have been responsible for an enormous leakage in the past, and a consequent loss of many thousands of pounds to the ratepayers. In addition, a short time ago the Council were put to an expense of about £15 per week to supply the gasholder tank with town water; it being essentially a case of desperate diseases requiring desperate remedies. Before that the leakage was made good by pumping water from two adjoining ponds; but for some time past the mains have had to be requisitioned for a supply. The pumps had also occasionally failed, just to make confusion worse confounded; and the unusual spectacle has been seen of the fire-engine being busily engaged in keeping the tank supplied with water. The employment of a Cameron ram pump has, however, made it possible to dispense with the services of the engine; and, on the advice of the new Manager (Mr. W. H. S. Gendall), another holder is to be erected as soon as possible. He recommends that a two-lift one, with a steel tank, should be put on the vacant land between the present holder and the boundary wall of the works; the tank to be sunk into the ground 9 feet below the level of the coping-stone of the existing holder. The dimensions of the tank would be 82 feet diameter and 18 feet deep; the outer lift of the holder being 80 feet, and the inner lift 78 feet, and each 18 feet deep. This would give a capacity of 176,000 cubic feet. The estimated cost is: Gasholder and tank, £3500; excavating and concrete, £424—total, £3924. To make the present tank satisfactory, Mr. Gendall states that it will be necessary to take out the exterior lift of the holder, and insert a steel tank in the present brick tank. This would reduce the storage capacity from 223,500 to 109,400 cubic feet. This, together with the capacity of the new holder suggested, would make a total of 285,400 cubic feet. The heaviest day's consumption being 303,000 cubic feet, the storage would not be up to the recognized quantity. The cost of the alteration is represented at an additional £1000. In the report embodying these recommendations, Mr. Gendall further states that when he entered upon his duties on the 1st of April, the exhausters were in such a bad condition that he did not consider it safe to work them; and these and the pumps he was obliged to have repaired without delay. A number of other improvements were suggested, and the Gas Committee of the Council, recognizing the urgency of the matter, have asked for estimates with the view to early consideration of the matter, which has greatly exercised the minds of the inhabitants of the town.

BIRMINGHAM CORPORATION GAS, ELECTRICITY, AND WATER SUPPLIES.

Annual Report before the Council.

At the Meeting of the Birmingham City Council on Tuesday, the reports of the Gas, Electricity, and Water Committees, which were noticed in last week's issue, were presented.

Mr. J. H. LLOYD, in submitting the report of the Gas Committee, moved that the sum of £553, being the net profit for the year ended March 31, be carried to the credit of the improvement rate. He remarked that the past year was one of maximum figures and minimum profit. The turnover was £844,000, as against £764,000 and £666,000 in the two previous years; and the capital employed was now greater than it had ever been before. The coal carbonized was 20,000 tons more than before, and the gas manufactured was 112 million cubic feet more. The receipts from the sale of gas were £54,000 higher than last year, and from coke and breeze the receipts reached the enormous total of £158,527. The cost of coal and oil had risen from £330,000 to £467,000—an increase of £136,247. Purifying material had cost £4500 more; and there was a rise of £900 in the repair and fixing of meters—due principally to the increase in the number of prepayment meters. The increase during the year was no fewer than 3205, or at the rate of more than 60 a week. The total number of these coin meters now reached 13,080. Rates and taxes disclosed an increase of £2652 on the year. Ten years ago the total amount was £17,461; and it was now £30,937. The only consolation to the Council and ratepayers was that £22,942 of the amount came back into the city funds. The total expenditure for the year was £144,611 more than in the previous year. Turning to the revenue side of the account, the receipts for gas were £54,000 more; for coke and breeze, £62,000 more; for tar, £3600 more; but ammoniacal liquor was £3177 less. The total receipts were £119,918 more, as against the increased cost of £144,611; leaving £24,693 less gross profit. To this must be added interest on mortgages and loans £2713 more, interest on bank overdraft £633, and sinking fund charges £1292—making a total of £29,331. The net profit for the year was therefore £553. In accordance with the decision of the Council on July 24 last, the price of gas was increased by only 3d. per 1000 cubic feet from the September reading of the meters. The Council were told at the time that, to provide the usual balance on the revenue account, an increase of 5d. would be needed; but the Committee pointed out that, as the contribution to the improvement rate for 1900 had already been made from the profits of the previous year, they proposed to revert to their former practice of providing the contribution to the rates of 1901 from the income of the department in the year 1901. The gas consumers had only had to pay £54,000 towards a rise of £140,000 in the cost of manufacture. Respecting the future, it was too early to speak. The coal contracts would be placed next month, and the Committee looked for a considerable reduction; but the price of coke had already fallen 2s. 6d. per ton. The Council might be sure that the Committee would endeavour to provide £30,000 as usual in aid of the rates in the current year.

Mr. WALTHALL observed from the accounts that no less a sum than £112,958 was charged to revenue account for repairs and maintenance and renewal of works, and £85,800 for extension of buildings, manufacture, plant, &c., to capital account. He considered the sum charged to revenue account was unreasonably large. During the last five years no less than £532,294 had been so charged; and he regarded it as a hardship upon the ratepayers, because it was minimizing the profits, and reducing the contribution to the rates this year from £30,000 to £500.

Mr. LANCASTER, on the other hand, thought it was wise to charge every repair possible to revenue account. It was the fault of the Council that the profits were so small; for the Committee told them last year that an increase of 5d. would be necessary for the same profit to be made as in the previous year. The Council, however, passed a resolution that only 3d. should be added. He believed the Committee had been selling gas at a loss and only making a profit on the residuals.

Mr. LLOYD pointed out that, in the previous year, the amount charged to revenue account was somewhat larger than last year. He did not think Mr. Walthall quite understood the position in regard to the contribution to the rates. He (the Chairman) did not see that the ratepayers were going to lose anything at all. The Committee had been able, by dealing with the accounts in this manner, to share with the consumer the tremendous rise in coal which had come upon the country so suddenly and alarmingly. The consumer paid part of the increased cost—the Council waited twelve months for its usual contribution; but that usual contribution of £30,000 would be paid at the end of the current year, and would come into the current financial

year. The Committee were able to take this course because in 1896-7 and 1897-8 £35,000 and £50,000 were paid over, in order that the Committee might be able in the future to pay the £30,000 at the beginning of the financial year. To meet the exceptional state of trade, they were now reverting to the old plan of paying the money at the end of the financial year.

The motion was agreed to.

Mr. LLOYD, in moving approval of the report, said this was the first annual report since their late Secretary (Mr. Edwin Smith) left the department. He should therefore like to say the Corporation had never had a more able and zealous officer. He was a man of the highest principle, and was always keen for the development of the gas undertaking on the best lines for the benefit of the city and neighbourhood. The Committee cordially wished him much happiness in the enjoyment of the superannuation to which his devoted services so richly entitled him. They had also lost Mr. William Fletcher, another efficient and reliable officer; and to his place they were glad to promote Mr. W. H. Powell, who had been a faithful assistant for many years.

Mr. LANCASTER sought a contradiction of a report that the Gas Committee had ordered pipes from America.

Mr. S. LLOYD asked for an explanation of the Gas Committee's opposition to the Mond Gas Bill. He expressed the opinion that the carrying through of the Mond scheme would be an inestimable benefit to the district. He regarded the Bill as the future salvation of the locality, and its radius was entirely outside the city of Birmingham.

Mr. LLOYD pointed out that the Council authorized opposition to the Bill; and he himself, after some ten days' attendance at the House of Commons, saw no reason to change his opinion. He did not think it would have been possible for them to have allowed the Bill to pass without opposing it. Probably Mr. S. Lloyd forgot that one of the Corporation's largest works was at Swan Village, in South Staffordshire, and that they supplied Wednesbury and Darlaston. In reply to Mr. Lancaster, he might state that it was common knowledge that last year a certain quantity of gas tube was bought from America for trial. This year a firm with an office in Birmingham quoted lowest; and their tender had been accepted. The tender did not state where the tubes were to be made; but the Committee believed that they were from South Wales.

The report was then approved.

Mr. JOHNSTONE, in submitting the report of the Electric Supply Committee, said there had been a steady increase in the business of the department; the number of units supplied being about 750,000 more than last year, and the cash receipts £10,500 more. The trading account showed a profit of £27,233—sufficient to pay interest and sinking fund, and to allow of £6600 being carried to the renewal fund.

Mr. WALTHALL, criticizing the report, charged the Committee with spending money without obtaining sanction to borrow it, and said that, although they congratulated themselves upon increased sales and profits, it seemed to him as if it were the other way about. He contended that the old Electric Light Company made a profit of £23,489, and that if a proportionate profit had been made by the city department, it would have amounted to £35,000, instead of £27,000. It appeared to him that the accounts had been presented in such a way as to show a much more flourishing state of affairs than really existed. In his opinion, until the electric light was popularized by a reduction of prices, nothing would be done in the way of profit making.

Alderman BEALE said he could not help wondering what the accounts would have looked like if Mr. Walthall had had to draw them up. He did not seem to see any distinction between spending money which was in hand, and asking the Council to allow more to be borrowed. The Committee did not go to the Council because they had got the money which they wanted to spend. In comparing the revenue with that of the old Company, Mr. Walthall did not make allowance for the increased price of materials; and therefore his comparison was an absolutely false one. If the Committee had not had special expenditure in connection with the change of voltage (which was not yet done with), they might have considered a reduction. He had no reason to suppose that in a short time they would not be able to effect a reduction.

The resolution was agreed to.

Alderman LAWLEY PARKER, in presenting the report of the Water Committee, first moved that the salary of Mr. William Gray, the Distribution Engineer, be increased to £400. He said Mr. Gray had been in the service 21 years, and occupied a very responsible position. He was Mr. Davy's right-hand man; and much depended upon him in cases of emergency. His ability in this direction had often been shown.

The motion was carried.

Alderman PARKER, in proposing the adoption of the report, said the rents during the year amounted to £9979 more than in the previous year—an increase of 4·32 per cent. This was a rather smaller percentage of increase than on former occasions; but the latter were abnormally large. The increase this year was in excess of the forecast; and at the present time they had an income of £25,000 a year more than was anticipated when the calculations were made for the Welsh water scheme. The oft-told tale, however, cropped up with reference to the great cost of fuel, which had absorbed all this extra income, and the profit and loss account showed a loss of £32,937; but this was after charging £91,166 interest on the capital outlay under the Act of 1892. Fortunately this loss of £32,937 was provided for out of the accumulated profits of previous years; and there was still a sum of £92,000 to meet similar deficiencies that might occur. Concerning the consumption of water, they were fortunate last year in having no long period of drought. He sincerely hoped they would have equally good luck in the next two years. If, on the other hand, there were prolonged periods of drought, they would have a very bad time. In view of this, they had not felt able to decline an offer made to them by the East Worcestershire Water Company to place at their disposal 500,000 gallons per day of their extra supply from June next until Birmingham obtained the Welsh water. It was true that 500,000 gallons per day was not much in the event of a drought. But every little helped; and in this case the water would be delivered at the higher levels without pumping by the Corporation. It was there where the need was the greatest. The Committee had been trying to obtain a further supply from Longbridge; but they had not profited by the operations owing to the breaking in of sand. Divers were at work endeavouring to remedy the fault; but he feared it would be some little time before they would be able to have the supply from this source that they had previously. Regarding the Elan supply, he said the works at Elan Valley were making satisfactory progress; but the work of the contractors upon some portion of the aqueduct was not so forward as could be wished. The Committee had the assurances of the contractors that they would make up for lost time; and he sincerely hoped this would be so. It was a satisfaction to the Committee that they had been able to place the contract for the distributing-mains through the city with Messrs. Aird and Co., as that firm had had great experience with work of that kind. In such work, some inconvenience to the public was inevitable; but every effort would be made to reduce it to a minimum.

The report (after being seconded) was approved.

MONTE VIDEO GAS COMPANY, LIMITED.

The Ordinary General Meeting of this Company was held last Thursday at Winchester House, Old Broad Street, E.C.—Mr. T. C. TATHAM in the chair.

The CHAIRMAN, before commencing the business, said he desired to refer to the death of their late Secretary (Mr. A. G. Hounsham). He was personally known to a great many of the shareholders; and, as they would remember, he was unable to be present at the meeting this time last year. Mr. Hounsham died in November after a long illness. During the whole of his absence from the office, his place was ably filled by the Assistant-Secretary (Mr. H. Kearns); and the Directors thought they could not do better than appoint him as Secretary.

The SECRETARY having read the notice convening the meeting, the report and accounts were taken as read.

The CHAIRMAN, in moving their adoption, said that on the debit side of the balance-sheet, it would be seen that the total receipts on capital account amounted to £574,500. This was £5600 less than in the preceding year, and was accounted for by their having paid off debentures to that amount. The debenture debt was now £32,580, having been reduced to this sum from the original amount of £58,080. The reserve account stood at £48,500, the insurance fund at £12,500, and the contingency account at about £9039—making a total of £70,039. The next item of importance was that of profit and loss, amounting to £20,765, which was an increase, he was glad to point out, of about £1600. Regarding the credit side of the balance-sheet, the Directors had written £1018 off capital as depreciation, and had expended £3211. This was an increase of more than £1300. Stocks showed a decrease compared with the previous year of £1600. Then sundry debtors—£16,541—contained all the outstanding accounts due on Dec. 31 last for gas, residuals, fittings, &c. Bearing in mind the amount of business the Company were doing, he did not think this was an unreasonable sum to be outstanding. As to the Government account of about £5600, he was sorry to say the same explanation as he gave last year still applied. He admitted that it was an old debt. But the Directors kept it on the books at its original figure, because the Government had frequently owed the Company large sums, and had, at some time or another, discharged them; and the Directors believed this debt would be settled sooner or later. The Government did not repudiate it The Company were entitled to interest; but the Board took no credit for that in the accounts. Investments and other property amounted to £37,108. The revenue account showed an increase of £1158, which, he ventured to suggest, was satisfactory, because, throughout the year under review, and more especially during the last half, they felt severely the higher price of coal and freights, which had been very much against the economical working of the concern. It was true, on the other hand, they had received a higher price for residuals; coke especially having been selling very well. Referring to the debit side of the revenue account, he said the cost of manufacture had increased, as was natural in view of the higher price of coal and freights. Although coal had fallen, and although freights were now somewhat lower, the Company would, for a considerable part of this year—and, indeed, he thought for the whole of it—have to work with dear coal and high freights. He mentioned this fact particularly, because the shareholders might feel there was a fair probability, when prices again became normal, of the accounts showing an improved profit on the working, seeing what they had been able to do during the past year. Turning now to the profit and loss account, it would be seen that it was credited with a balance from revenue account amounting, after paying all outgoings, to £23,104, to which they had added interest and discount and Directors' fees waived, making, with the balance brought forward, £24,332, as against £23,106. From the sum mentioned, they had deducted interest on debentures £1909, loss on exchange £119 (which, by the way, compared with a profit of £131 in the previous year), bad and doubtful debts £519, and depreciation £1019—leaving a balance of £20,765 available for distribution. From this the Directors paid a dividend for the first half of the year at the rate of 3 per cent.; and they now proposed to pay a final dividend at the rate of 4 per cent. per annum. This would absorb £18,967, and leave a balance of £1798 to be carried forward, as compared with £187 in the previous year. He was glad to say that the private consumers continued to increase; and the Directors hoped, by supplying good gas at the present reduced price, they would be able to still considerably increase the number. During last year, the number advanced by 7·25 per cent.; and the increase was going on at the same rate this year. Reverting to the question of the debenture debt, he said that about ten years ago, when it became necessary to extend the productive and storage power of the Company, the shareholders decided to borrow by the issue of debentures to the amount of £58,080, which corresponded with the amount of unissued capital. It was at the time believed that an enlargement of the works and the expenditure of the money would be productive of considerable extra profit. The enlargement was absolutely necessary for the business then being done. It was thought that, at the end of five years, the holders of the debentures would be very glad to exchange the debentures for fully-paid shares. This, however, had not come about. According to the contract, the debentures became payable in the beginning of 1896. Since then they had paid off £25,500; and they could go on paying off

to the end. The Directors considered terminable debentures were an element of weakness in this and, in fact, in any Company; and it was never intended that the new works should be paid for without some further capital being issued against them. After full consideration, the Board thought the debenture debt should be permanent; and they suggested to the shareholders that mortgage debentures should be issued to the extent of £58,080. They would possibly be able to issue mortgage debentures at the rate of 4½ per cent., which would only require £2600 annually; and thus it would form an admirable security. There was no occasion at the moment to carry out this proposal; and before anything was done in the matter, the Directors would take the vote of the shareholders upon it.

Mr. M. T. Hood seconded the motion.

Mr. A. H. Barker congratulated the Board on what he thought, under the circumstances, was a favourable report. He also fully endorsed the Chairman's remarks as to terminable debentures being a source of inconvenience and weakness.

Questions having been put by Mr. Quartermain and Mr. H. Smith,

The Chairman, in reply, first spoke of the competition of the electric light; remarking that during the last ten years the Company had lost from public lighting alone upwards of £22,500. The Directors and the Management in Monte Video were doing all they could to increase the number of consumers.

The motion was unanimously carried.

On the proposition of the Chairman, seconded by Mr. Simpson Rostron, a dividend was declared at the rate of 4 per cent. for the second half of the year.

The retiring Directors (Mr. Simpson Rostron and Mr. Hood) were unanimously re-elected; Mr. T. S. Soden was appointed an Auditor in the place of Mr. Barber, who retired; and Messrs. Price, Waterhouse, and Co. were re-elected.

The customary votes of thanks were passed to the Chairman and Directors and to the officials in Monte Video and London.

RHYL GAS SUPPLY.

At the last Meeting of the Rhyl Urban District Council, the Gas Committee submitted their estimates for the year, which anticipated a profit, with the balance of £570 brought from last year, of £1188 at the end of the current financial period. It was resolved to reduce the price of gas uniformly from 3s. 7d. to 3s. 4d. per 1000 cubic feet, to commence with the quarter ending Sept. 25 next, and further to vote £750 from the estimated profits to the general district rate account. Mr. J. Williams, in moving the confirmation of the minutes, said that the fact that the gas-works showed a profit was due to their careful and economical management. While the Gas Committee might have used all the profits for the benefit of the consumers, they determined to make a contribution towards the reduction of the general district rate. They had under consideration other means of disposing of the surplus, such as abolishing meter-rents, allowing discounts for prompt payment, &c.; but they deferred to the strong feeling that something should be done this year to reduce the district rate. Mr. J. Frimston, in seconding the motion, said he thought the present would be a very opportune occasion for making a few remarks on the gas undertaking. This was the first time since they had obtained possession of the works that they had been able to transfer any of the profits towards the reduction of the general district rate. The works were taken over by the Council in January, 1893, at a capital cost of £34,000. The number of consumers at that time was 600; but they had not a single prepayment meter in the town. At present they had 490 of them; and by their introduction they had increased the number of consumers by 500. In 1893 they had only 15 cookers out; now they had upwards of 500. Eight years ago there were only two gas-engines using gas as a propelling power in the town; now they had twenty of them. This showed clearly the energy that had been displayed in pushing the use of gas, the consumption of which had gone up enormously. In 1894 it was 26,862,000 cubic feet; and in 1901, 44,376,000 cubic feet—an increase of 17,514,000 cubic feet. Meantime the works had been placed in an excellent state of repair. This, coupled with excellent management, had enabled them to economize in the cost of production by 7¼d. per 1000 cubic feet, while the proportion chargeable to loans had been reduced from 1s. 5½d. to 1s. 1½d. Before the works were purchased, the Council had to pay to the Gas Company 3s. 9d. per 1000 cubic feet for gas for street lighting; but since they had obtained possession of the works, they had only charged 3s.—a saving of 9d. The profit on the revenue account last year was £3291; and had the works been in the hands of a private company, this would have been equal to a dividend of 7¾ per cent. on £42,700, which was the capital of the undertaking at the present time, or with coal at normal prices the profit would be equal to 10 per cent. The Council would thus see that they had in the gas-works a very remunerative concern. He estimated that the works were now worth £60,000 or £70,000 to the town; so that they had in them a very valuable asset. He thought this fact reflected great credit on the Engineer and Manager (Mr. Leonard G. Hall, Assoc M.Inst.C.E.), for the efficient way in which he had conducted the undertaking. Mr. J. H. Ellis congratulated the Gas Committee on the prosperous financial state of the department. Next year he hoped they would make a step in the direction of abolishing meter-rents, for it was a charge that militated against the consumption of gas. Mr. Greenhalgh said the prosperity of the undertaking was the result of improvement and progress in the town. The population had increased 2000 in ten years; and here was to be found the secret of the success of the gas-works. Mr. Whitley approved of the policy of the Committee in devoting the largest part of the profits towards reducing the rates. Mr. Frimston added that last year alone a sum of no less than £1800 was taken out of the slot meters. The minutes were approved.

During the past year, the water income of the Scarborough Corporation was £14,827; and the expenditure, £14,826.

GAS AND WATER COMPANIES' STOCK AND SHARE LIST.

Referred to on p. 1440.

Issue.	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p.c.	GAS COMPANIES.			£ s. d.
590,000	10	Apl. 12	10½	Alliance & Dublin 10 p.c.	19—20	..	5 5 0
100,000	10	,,	7½	Do. 7 p.c.	13—14	..	5 7 2
300,000	100	Jan. 2	5	Australian 5 p.c. Deb.	102—104	..	4 16 2
200,000	5	May 15	6½	Bombay, Ltd.	6—6⅛*	..	5 0 0
40,000	5	,,	6½	Do. New, £4 paid	4¼—4⅜*	..	5 9 5
380,000	Stk.	Feb. 14	12	Brentford Consolidated	260—265	..	4 10 7
270,000	,,	,,	9	Do. New	187—192	..	4 13 9
50,000	,,	,,	5	Do. 5 p.c. Pref.	128—132	..	3 15 9
159,375	,,	Dec. 13	4	Do. 4 p.c. Deb.	113—116	..	3 9 0
220,000	Stk.	Mar. 14	10	Brighton & Hove Orig.	222—227	..	4 8 1
226,320	,,	,,	7	Do. A. Ord. Stk.	160—165	..	4 4 10
1,022,500	Stk.	Feb. 27	5	Bristol, 5 p.c. max.	119—121	..	4 2 8
420,000	20	Mar. 28	10	British	41—42	..	4 15 3
50,000	10	Feb. 28	12	Bromley, Ord. 10 p.c.	24—26	..	4 12 4
79,000	10	,,	9	Do. 7 p.c.	19—21	..	4 5 8
500,000	10	Oct. 12	6	Buenos Ayres (New) Ltd.	9—10	..	6 0 0
220,000	Stk.	Dec. 28	4	Do. 4 p.c. Deb.	97—100	..	4 0 0
150,000	20	Mar. 14	8½	Cagliari, Ltd.	22—24	..	6 17 6
100,000	10	Sept. 28	10†	Cape Town & Dis., Ltd.	15—16	+½	6 5 0
50,000	50	May 2	6	Do. 6 p.c. 1st Mort.	51—53	..	5 13 2
550,000	Stk.	Apl. 12	12	Commercial Old Stock	275—280	..	4 5 9
236,425	,,	,,	9	Do. New do.	205—210	..	4 5 9
238,237	,,	Dec. 13	4½	Do. 4½ p.c. Deb.	130—135	..	3 6 8
800,000	Stk.	Dec. 13	9	Continental Union, Ltd.	165—170	..	5 5 11
200,000	,,	,,	7	Do. 7 p.c. Pref.	163—168	..	4 3 4
575,000	Stk.	Feb. 28	5	Crystal Palace Ord. 5 p.c.	120—125	..	4 0 0
60,000	,,	,,	5	Do. 5 p.c. Pref.	125—130	..	3 16 11
486,090	10	Jan. 31	11	European, Ltd.	20—21	..	5 4 9
354,060	10	,,	11	Do. £7 10s. paid	14½—15½	..	5 6 5
15,079,885	Stk.	Feb. 14	4⅛	Gaslight and Coke { 4 p.c. Ord.	94—96	+1	4 11 8
2,600,000	,,	,,	3½	{ 3½ p.c. max.	90—92	..	3 16 1
3,799,735	,,	,,	4	{ 4 p.c. Con. Pref.	109—112	..	3 11 5
4,063,425	,,	Dec. 13	3	{ 3 p.c. Con. Deb.	93—95	..	3 3 2
70,000	10	Oct. 26	8	Hongkong & China, Ltd.	13⅝—14½	..	5 10 4
3,800,000	Stk.	May 15	10	Imperial Continental	210—215*	..	4 13 0
473,600	Stk.	Feb. 14	3½	Do. 3½ p.c. Deb. Red.	100—102	..	3 8 8
561,000	Stk.	Feb. 28	10	Liverpool United A	234—236	..	4 4 9
678,100	,,	,,	7	Do. do. B	172—176	..	3 19 7
306,083	,,	Dec. 28	4	Do. do. Deb. Stk.	120—122	..	3 5 7
75,000	5	Dec. 13	6	Malta & Medn., Ltd.	4⅜—5⅛	..	5 14 3
560,000	100	Apl. 1	5	Met. of { 5 p.c. Deb.	104—107	..	4 13 5
250,000	100	,,	4½	Melbourne { 4½ p.c. Deb.	102—104	..	4 6 6
541,920	20	Nov. 14	3½	Monte Video, Ltd.	9⅜—10⅜	..	6 13 4
717,946	Stk.	Feb. 22	8½	Newc'tle & G'tesh'd Con.	227—228	..	3 14 7
312,855	Stk.	Dec. 28	3½	Do. 3½ p.c. Deb.	99—101	..	3 9 4
150,000	5	May 15	8	Oriental, Ltd.	6½—7¼*	..	5 10 4
135,000	5	,,	8	Do. New, £4 10s. pd.	5½—6⅝	..	6 0 0
15,000	5	,,	8	Do. do. 1879, £1 pd.	1⅛—1⅜*	..	4 11 5
					*Ex. div.		

Issue.	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p.c.	GAS COMPANIES.			£ s. d.
60,000	5	Feb. 28	7	Ottoman, Ltd.	5⅜—6¼	..	5 12 0
851,070	10	Apl. 26	7	River Plate Ord.	10¾—11¼	..	6 4 5
250,000	Stk.	Dec. 28	4	Do. 4 p.c. Deb.	98—100	..	4 0 0
250,000	10	Mar. 28	8	San Paulo, Ltd.	11—12	..	6 13 4
135,000	Stk.	Mar. 14	10	Sheffield A	235—240	..	4 3 4
209,984	,,	,,	10	Do. B	234—236	..	4 4 9
523,498	,,	,,	10	Do. C	234—236	..	4 4 9
5,761,885	Stk.	Feb. 14	5	South Met., 4 p.c. Ord.	126—129	+2	3 17 6
1,547,965	,,	Jan. 16	3	Do. 3 p.c. Deb.	93—96	..	3 2 6
380,940	Stk.	May 15	5	Southampton Ord.	106—111*	..	4 10 1
70,825	,,	Jan. 16	4	Do. 4 p.c. Deb.	105—110	..	3 12 9
120,000	Stk.	Feb. 28	6	Tottenham and { A. 5 p.c.	115—120	..	5 0 0
250,520	,,	,,	4½	{ B. 3½ p.c.	85—90	..	5 0 0
80,100	,,	Dec. 13	4	Edmonton { 4 p.c. Deb.	109—114	..	3 10 2
182,380	10	Jan. 16	5	Tuscan, Ltd.	8—9	..	5 11 1
149,900	10	Jan. 2	5	Do. 5 p.c. Deb. Red.	97—102	..	4 18 0
230,000	5	Feb. 28	9	West Ham, 10 p.c.	9—10	..	4 10 0
147,000	10	,,	6	Do. 7 p.c.	11½—12½	..	4 16 0
128,984	Stk.	Dec. 28	4	Do. 4 p.c. Deb.	105—110	..	3 12 9
				WATER COMPANIES.			
780,499	Stk.	Dec. 28	11	Chelsea, Ord.	292—297	..	3 14 1
150,000	,,	,,	5	Do. 5 p.c. Pref.	155—160	..	3 2 6
160,000	,,	,,	4½	Do. 4½ p.c. Pref. '75	138—143	..	3 2 11
175,785	,,	Mar. 28	4½	Do. 4½ p.c. Deb.	140—145	..	3 2 1
1,720,560	Stk.	Apl. 12	7	East London, Ord.	188—193	..	3 12 6
654,740	,,	Dec. 13	4½	Do. 4½ p.c. Deb.	145—150	..	3 0 0
930,169	,,	,,	3	Do. 3 p.c. Deb.	95—97	..	3 2 6
700,000	50	Dec. 13	8	Grand Junction { 10 p.c. max.	105—108	..	3 14 1
310,000	Stk.	Mar. 28	4	{ 4 p.c. Deb.	123—127	..	3 3 0
708,000	Stk.	Feb. 14	14	Kent	298—303	−2	4 12 5
160,000	,,	,,	7	Do. New, 7 p.c. max.	200—205	..	3 8 4
1,043,800	100	Dec. 28	10½	Lambeth, 10 p.c. max.	270—280	..	3 15 0
406,200	100	,,	8	Do. 7½ p.c. max.	207—212	..	3 15 5
350,000	Stk.	Mar. 28	4	Do. 4 p.c. Deb.	123—126	..	3 3 6
500,000	100	Feb. 14	13¾	New River, New Shares	405—410	..	3 7 1
1,000,000	Stk.	Jan. 31	4	Do. 4 p.c. Deb.	125—130	..	3 1 7
502,300	Stk.	Dec. 13	7	South-wark and Vauxhall { Ord.	188—193	..	3 12 6
126,500	100	,,	7	{ 7½ p.c. max.	177—182	..	3 16 11
489,200	Stk.	,,	5	{ 5 p.c. Pref.	153—158	..	3 3 3
1,019,585	,,	Apl. 12	4	{ 4 p.c. A Deb.	125—130	..	3 1 7
1,155,066	Stk.	Dec. 13	10	West Middlesex	265—270	−2½	3 14 1
200,000	,,	,,	4½	Do. 4½ p.c. Deb.	140—145	..	3 2 1
200,000	,,	Mar. 14	3	Do. 3 p.c. Deb.	96—98	..	3 1 3
					*Ex. div.		

† Next dividend will be at this rate.

PUSHING THE GAS BUSINESS IN AMEPICA.

Fresh Start by the New Orleans Gas Company.

Those of our readers who perused the series of articles by Mr. E. W. T. Richmond which appeared in the "JOURNAL" early in the year, had a good opportunity of making themselves acquainted with the methods adopted by our cousins on the other side of the Atlantic for pushing the gas business. An excellent example, which may well supplement the particulars there given, has just reached us from New Orleans. On the 1st inst., something like a revolution took place in connection with the gas supply of the city. The old order of things, represented by the New Orleans Gaslight Company, had passed away, and there appeared in its place the New Orleans Lighting Company—a lessee concern under entirely new management, with Mr. Bankson Taylor as its moving spirit. The first thing the new Company did was to announce their policy; and the method selected was the truly American one of a full-page advertisement, strikingly printed in two colours, in a local paper, accompanied by an appreciative editorial notice and the inevitable interview. The conspicuous feature of the new policy is liberality combined with courtesy. In the first place, the price of lighting gas is reduced from $2·50 to $2 per 1000 cubic feet—a "cut" to the extent of 20 per cent.; next, fuel gas is sold at $1·40 instead of $1·50 per 1000 cubic feet, with a discount of 15 c. if paid for at the office within ten days (instead of five as hitherto) of the demand; and, finally, no meter-rent is charged, except in cases where meters are retained to insure the electric service. But these concessions do not exhaust the Company's "liberality." Consumers desirous of adopting gas stoves, ranges, or heaters, have these appliances fitted up free; and if they wish to purchase them, they can do so at a reduction of $6·50—from $16·50 to $10. The aim of the management is to make it easy for everyone to secure the convenience and economy of cooking by gas; and therefore they submit for acceptance four alternative propositions, whereby a consumer can purchase his stove outright or by instalment, or rent it; and they will allow free trial for 30 days, and remove it if the consumer decides not to continue it. But having had a month's experience of the many advantages of gaseous fuel for culinary purposes, we question whether the housewife will care to go back to her old methods. Taking a slight liberty with the words of the immortal Clockmaker, "we can do without an article we have never had; but when once obtained, it is not in human nature to surrender it voluntarily." The new Company expect to sell 5000 ranges in a year on the terms they offer. Their liberality should ensure them plenty of business, especially when to it are united courteous and willing attention to the wants of customers, who have only to communicate with the office if they wish to have their pipes examined, their burners looked to, their ranges adjusted, or their cooks instructed, and it will be done free of cost. Where mains are not laid, the Company will put them down within reasonable distances, and no deposits will be exacted in respect of them. In short, according to a statement made by the Manager to his interviewer, the Company want to prove to the New Orleans public their assertion that the new management will supply gas at a much cheaper rate than that at which it could ever be obtained before in the city, and to furnish other notable reliefs to the consumers. Mr. Frederick H. Shelton is Engineer of the Company.

ELECTRIC LIGHTING NOTES.

The St. Helens Corporation Gas-Works have made a net profit of nearly £5000 during the past year, of which £2500 is to go to the relief of rates. The electricity works have also made a profit of £1200; but the rates will not benefit from this.

The Rotherham Corporation electricity generating station in Rawmarsh Road was formally opened last Thursday. It is the initial effort on the part of the Local Authority to supply electricity for lighting purposes, and the works and plant have cost £24,500. From 4000 to 5000 lamps can be supplied at one time; and the works are capable of extension. The price for current is 5d. per unit.

Owing to the breaking of the electric cable supplying 30 arc lamps in the Finchley Road, this thoroughfare, which is one of the busiest in Hampstead, was in almost total darkness a few evenings since. Fortunately, five gas-lamps had not been removed when the electric light was installed; and they had to serve half-a-mile of road. The darkness was intense; and great risk and inconvenience were occasioned.

Speaking at the meeting of the Cardiff Corporation Electric Lighting Committee last Tuesday, Mr. Ellis stated that the loss on the department during the year ending March, 1900, was £1700; and he anticipated the loss on the year just closed would not exceed £300. At the present time they were working at a profit. The estimated revenue for the year ending March last was £9969, whereas the actual revenue was £11,670.

Last Friday afternoon, the Mayor of West Bromwich (Mr. J. H. Chesshire), in company with Alderman S. Pitt (Chairman of the Electric Light Committee of the Corporation), and Mr. W. R. Wray (Electrical Engineer), attended at the electric works, and His Worship turned on the electric current. This was the initial step towards the town being permanently supplied with the new illuminant. The works will be formally opened in about a month's time.

The receipts of the Leeds Corporation Electricity Department for the past year amount to £43,669, and the expenditure (including the payment of interest) to £29,155; leaving a net profit of £14,514. From this sum, however, £7632 15s. 2d. has been deducted in respect of sinking fund, so that the surplus of income over expenditure and provision for the future is really £6881. The previous year's surplus was £8500. It is stated that if it had not been for the high price of coal during the year, the Committee would have had a surplus of above £9000. There are about 2000 consumers on the books.

Reviewing the work of the past year at the meeting of the Hull Electric Lighting Committee last Thursday, the Chairman (Mr. Skinner) said they had expended on capital account £36,177; making

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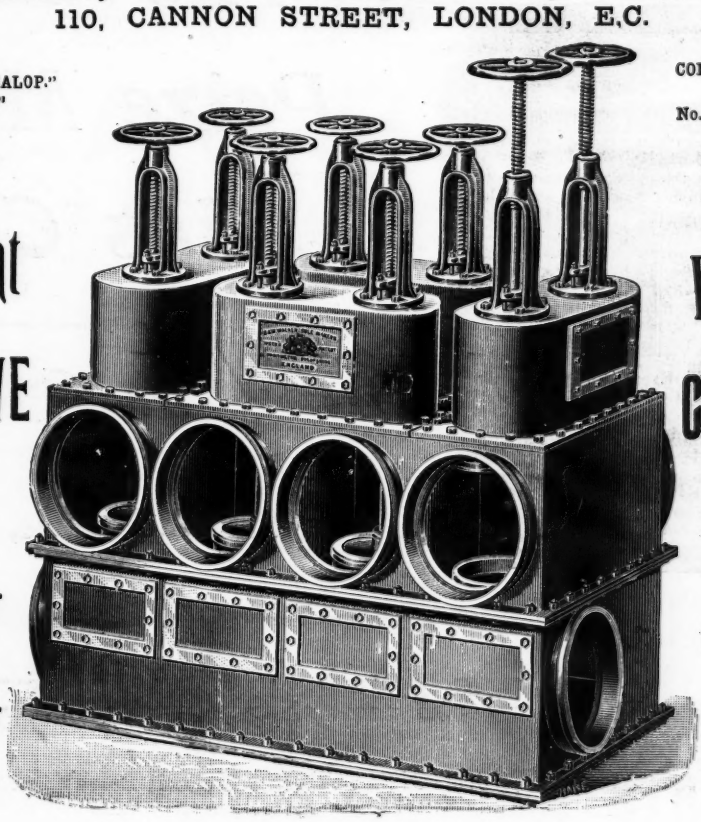

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the total expenditure up to date £169,979. In redemption of debt £4203 had been added to the sinking fund, which stood at the present time at £15,749. Considerable additions had been made to the plant; and he believed it would be sufficient to carry the Committee efficiently over the next Christmas. There had been a large increase in the number of customers. There were now 1541 consumers—an addition of 215 being made during the year. The consumption was 1,307,075 units; yielding an increase of over 33 per cent. above the previous year. Increased attention was being directed to the use of electricity for motive power; and, during the year, 42 motors had been connected up. The gross receipts had been £24,577, and expenditure £13,736; leaving a balance of £10,840. This amount was disposed of as follows: Interest on loans, £4829; sinking fund contribution, £3857; instalment written off meters, £923; reserve fund (net profit), £1231. After carefully looking at the further large expenditure which the Committee would have to undertake during the next year, in addition to the using of what they had sought to borrow, he felt that, in the interests of the undertaking, it would be wise to reduce the charges for current by ½d. per unit from March 31 last. This would absorb £2723 out of the present year's receipts; but he had a confident judgment that this generous policy would secure a large increase of new customers.

The beginning of a nice little "shindy" was witnessed in the Wandsworth Borough Council at a recent meeting, when Lieut.-Gen. Lance called attention to the methods adopted by the Brush Provincial Electric Lighting Company in the borough, which, he said, constituted "a real grievance" so far as all local consumers of electricity were concerned. It appears that they have been attracted by the professed advantages of the "maximum demand" system; but, after trying it, they have confessed that, if they had had any idea how it worked in practice, they would never have had any installation of electric light in their houses. The speaker explained that "in most private houses there are at least double—sometimes treble—the number of lamps that are generally in use at once; but if a very large proportion of these lamps happen to be lighted together for even half-an-hour the amount of current registered for that time forms the maximum demand, which must be consumed, as explained, before any rebate is made. Then, again, every day that the family is absent from home reduces the chances of getting any rebate; and the ordinary householder finds that he has to pay his 7d. for every unit that he expends, or, if he does secure any rebate the amount is insignificant." He acknowledged that the maximum demand rate had been reduced to 1½ instead of 2 hours' consumption; but even so there was not a single electric light company in London whose charges for current for lighting purposes were so high as those of the County of London and Brush Provincial Company. Their charge for current for motive power was 6d. per unit, the usual price being from 4d. to 1½d. He contended that the Wandsworth consumers were being made to pay high charges to compensate for comparative failures elsewhere. The principal cause of complaint, however, was with regard to pressure. The Company professed to supply alternating current at a pressure of 200 volts; but General Lance, after some not very agreeable correspondence, succeeded in extracting the confession that it was 205 volts. His experience with the Company's officials having been so unsatisfactory, he resolved never to darken their doors again. He accordingly requested an electrician to test the currents in various parts of the borough supplied by the Company, and obtained very varying results. In one case the pressure rose to 228 volts, and in two others it fell to 206 volts, and then rose to 220 volts. The speaker pointed out that if the current was uniformly supplied at a voltage considerably above the declared rate, although within the limits laid down by the Board of Trade, an injury was inflicted on the consumers. There were three grave disadvantages in running through a lamp current of a higher voltage than that for which it was constructed. In the first place, it shortened the life of the lamp; secondly, the illuminating power was reduced; and, thirdly, the expenditure of current was greater, with no advantage to the consumer in the matter of light. The consumer's bill was increased in Roehampton by 44 per cent., in Putney by 35 per cent.; and so on in proportion to the excess pressure supplied. The reticence of the Company as to the real strength of the current had been profitable to them, but costly to the consumers; and their conduct was open to severe criticism. Having read the Board of Trade rules in regard to the penalties to be imposed for undue variations of voltage, General Lance concluded by proposing—"That, in view of the irregularities committed by the County of London and Brush Provincial Electric Lighting Company, this Council take measures to secure the imposition of the full penalties to which, by the regulations of the Board of Trade, the Company has rendered itself liable." Mr. Lorden seconded the proposition; remarking that the lights often went out suddenly, and the charges were greatly to the advantage of the Company. He expressed the hope that the Council would take the matter up strongly. It was eventually resolved to refer the motion to the General Purposes Committee, who were, by an additional resolution, authorized to obtain special assistance in dealing with the matter.

Meltham Gas Supply.—At the last meeting of the Meltham District Council, the accounts of the gas undertaking for the year ending the 31st of March were presented. They showed a total revenue of £2112, or at the rate of £1 12s. 11d. per ton of coal carbonized; manufacture costing at the rate of £1 8s. 2¾d. per ton. The profit was £332. Out of the £8000 of capital originally borrowed for the undertaking, £4780 had been repaid up to the end of the financial year.

Gas for Trade Purposes in Southport.—In the report of Mr. John Booth, Gas Engineer of the Southport Corporation, for the past financial year, there is an interesting statement in regard to the quantity of gas used for trade purposes in the district. It amounted, in the period covered, to 21,596,000 cubic feet, apportioned as follows: Brazing, 335,800 cubic feet; enamelling, 422,000 cubic feet; chip ranges, 2,462,600 cubic feet; bread baking, 3,915,400 cubic feet; laundries, 1,060,500 cubic feet; coffee roasting, 50,900 cubic feet; and gas-engines, 13,348,800 cubic feet.

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WEST MIDDLESEX WATER-WORKS COMPANY.

The Half-Yearly General Meeting of the Company was held, at the Offices, Marylebone Road, last Tuesday, under the presidency of Mr. E. Boulnois, M.P.

The Secretary (Mr. F. H. Wybroo) read the notice calling the meeting, and subsequently the Auditors' report. This stated, *inter alia*, that the amount received on capital account to March 31 last was £1,883,028, including £40,512 received during the past half year; and that the capital outlay on works to the same date was £1,829,779, including £60,554 expended in the six months. The gross rental for the half year to Lady-day last was £145,508, or an increase of £1504 on that of the corresponding period of the previous year. The balance to the credit of dividend and interest account was £58,004.

The Chairman observed that the report contained nothing very startling or novel. The Company were, in fact, pursuing their even way; and they were doing their best to carry out the statutory obligations which had been imposed upon them. The Directors were maintaining the works in a high state of efficiency; and they were extending the operations of the Company in order to meet the rapidly increasing demands which were made upon them—especially in the district lying to the north-west, where building operations were going on at an extraordinary pace. He was sure the proprietors would agree in the wisdom of the Board's decision to provide additional storage for coal at Hammersmith. It was impossible, in these days of doubt and uncertainty, to foresee what might happen in the coal trade; and, at all events, the Directors had thought it right to provide against all possible contingencies. The report referred to the Bill which was introduced by the London County Council for purchasing the undertakings of the Metropolitan Water Companies, and to its rejection by the House of Commons on the second reading; and looking at the fate of some Private Bills, and the majorities by which they had been carried or rejected, he thought he was justified in saying that the majority of 77 on that occasion was highly satisfactory. The Bill was thrown out, not from any great love that the House of Commons bore to the Water Companies, but, he thought, because the measure was in direct opposition to the report and recommendations of the Royal Commission; and he ventured to predict that a similar fate would attend any Bill that was introduced which practically ignored the authorities outside the county of London—authorities which represented an area five times as large as London proper. The Bill also contained a peculiar clause with respect to arbitration; and although it was certainly framed on somewhat different lines to that upon which the County Council had originally set their hearts, still it was a peculiar clause. He could not see why the London Water Companies should be treated differently from the companies in large provincial towns in regard to terms of purchase. As far as his judgment went, the case of the London Companies differed in no respect from that of the companies in large provincial towns where the municipalities had acquired the supply, except in the magnitude of the transaction. In the debate on the second reading, the President of the Local Government Board stated that the Government next session would deal with the Metropolitan Water Question, and that he would bring in a Bill. The Companies must postpone making any pronouncement or taking any action upon this Bill until they saw its provisions. They had always said that, although they were not willing sellers, yet if the Legislature determined that they should part with their property and that the water supply should be handed over to others, they would acquiesce, as other companies had had to acquiesce before; but that they would defend to the utmost any attempt to depreciate their valuable property, and would rely on Parliament to see that the same justice which had been meted out in all similar transactions should be extended to the London Water Companies. Personally, he had the greatest confidence that, in the Government Bill which had been foreshadowed, their just and lawful interests would be safeguarded and preserved. Reference was made in the Directors' report to the inquiry by the Local Government Board into the proposed regulations for preventing the waste of water which were sent in by the eight Metropolitan Companies—a matter to which he alluded at the last meeting. A great deal was made of the inquiry and of the subject-matter of the regulations; but the whole affair was greatly misunderstood, and was misrepresented by those whose interest it was to do so. Unfortunately, the inquiry was opened by the Local Government Board on the eve of the general County Council election; and the opportunity was too good to be lost by the Progressive candidates and canvassers. The regulations were framed in accordance with the report and recommendations of the Royal Commission. They were framed to prevent waste—a matter specially dwelt upon by the Royal Commission. The consumers in their district were deeply concerned in this question; for at the present time they were partners with the Company, and sharers in their profits, and, of course, all waste diminished profits. With regard to cisterns, about which a great deal was made, they existed in their district; and they were maintained by wise householders as a prudent precaution. A constant supply was now given throughout the Company's entire area, not only in what was called the Metropolis, but outside. If the London County Council ever got control of the water supply, they might be able—being such a heaven-born body—to prevent frost, or drought, or accident; and then, of course, all would be well. But he would undertake to say that whoever became the purchaser of the undertakings, and had the control of the supply in the Metropolis, must, for their own protection, issue regulations. He ventured also to predict that the regulations issued by any public body would be far more severe, far more stringent and drastic, than those submitted by the Companies. Mention was made in the revenue account of a payment to the Chamberlain of London of £7653. This was a large sum—far larger than appeared a year ago—and it must increase year by year. As it increased, a diminution in the handsome rebate now allowed to all the Company's consumers was within measurable distance. He did not say that the whole of it would become ultimately absorbed; but unless Parliament did something towards relieving the Companies of this

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extremely onerous and singular impost, there was no doubt whatever that the consumers in the West Middlesex district must suffer ultimately, in connection with the rebate which was at present allowed them. He concluded by moving the adoption of the report and accounts.

The DEPUTY-CHAIRMAN (Mr. Jackson Hunt) seconded the motion, which was at once carried unanimously.

Resolutions were subsequently passed declaring a dividend on the consolidated stock for the half year ended March 31 last at the rate of 10 per cent. per annum, less income-tax, and re-electing the retiring Directors and Auditors; regret being expressed at the resignation by Mr. George Pitt of his appointment as one of the Auditors, whose place was not filled up at the meeting.

Mr. SWIFT afterwards proposed, and Mr. H. P. BODKIN seconded, a vote of thanks to the Chairman and Directors.

The CHAIRMAN acknowledged the compliment; and the proceedings then terminated.

WATER SUPPLY FOR WALLASEY FROM LIVERPOOL.

Mr. A. E. Sandford Fawcett, of the Local Government Board, held an inquiry at Egremont last Tuesday, with reference to the applications of the Wallasey District Council and the Liverpool Corporation for permission to borrow money for the construction of works to extend the water supply to the Wallasey district. The Liverpool Corporation desire to borrow £146,000 for the laying of a water-main from the Vyrnwy pipe-line at Hatchmere into the Wallasey district; and the Wallasey District Council seek powers for borrowing £17,500 for the laying of a main from the outskirts of their district at Leasowe to Gorse Hill, and £27,225 for water-works, including a reservoir, at Gorse Hill. Mr. Madden appeared in the interests of the District Council; Mr. Pierce, Deputy Town Clerk, supported the applications on behalf of Liverpool; and Mr. Leslie Scott opposed for the West Cheshire Water Company. Mr. Madden, in opening the inquiry, showed the Inspector the necessities of the Wallasey district. Mr. Pierce stated that Wallasey, under the agreement, was to immediately pay for a minimum of 500,000 gallons a day, whether they used it or not. On three months' notice the quantity might be increased to 1 million gallons; and on five years' notice, the District Council would be entitled to as great a supply as the mains would carry, which was about 2 million gallons. The Wallasey Council would pay the Corporation annually the sum of 6½ per cent. on the cost of the outside main—viz., £146,000. In the event of the agreement being determined, the Corporation would have to refund what the Council had paid. Several witnesses gave evidence in support of the scheme—among them Mr. J. H. Crowther and Mr. Joseph Parry. The former stated that the main outside the district would be 31 miles in length; and inside 3¾ miles. Mr. Carr, the Engineer to the West Cheshire Water Company, expressed the view that there was a sufficiency of water in Wallasey to supply the district for the next 30 or 40 years. Mr. Scott, for the Company, asked that clauses should be inserted in the Order prohibiting the Corporation supplying water in the Company's area, and from interfering in any way with their mains. The water supplied by his Company, he submitted, was absolutely pure, though somewhat hard. One or two other opponents addressed the Inspector.

NOTES FROM SCOTLAND.

From Our Own Correspondent.

Saturday.

It was reported to the Gas and Electricity Committee of the Aberdeen Town Council this week, that the quantity of gas manufactured during the past month was 42,426,000 cubic feet, as against 37,875,000 cubic feet in the corresponding month of last year; and that during April the sale of coke realized £611, as against £513, and tar and ammoniacal liquor £471, as against £570. Aberdeen is advancing rapidly in size; and the movement is reflected in an increased output of 4½ million cubic feet of gas during April, by which time the demand is very greatly reduced.

The Stonehaven Gas Company are always among the first to hold their annual meeting. It took place on Monday, when the Directors reported a net profit for the past year of £700. The dividend paid was at the rate of 3s. per share. The Chairman explained that, having a large stock of coal on hand last year when the price rose, they were able to get along with an increase of only 5d. per 1000 cubic feet in the price of gas. But there would have been a decrease of £130 in profit had it not been that the consumption had increased by 5 per cent. They had paid £300 more for coal than they did the previous year. A shareholder suggested that the Directors might encourage the use of gas by furnishing it for cooking purposes at a cheaper rate, or by supplying stoves free, with no charge for meters, and retaining the price of gas at its present figure. The Chairman said the Directors would consider the matter.

The Directors of the Buckie Gaslight Company reported to the annual meeting of the shareholders on Monday a profit for the year of £246, which was considered very satisfactory. A dividend at the rate of 7½ per cent. was declared; and it was resolved to write 2½ per cent. off the value of buildings and plant, and 6 per cent. off that of meters. There is a probability of the price of gas being reduced.

The Stranraer Gas Company have reduced their price from 5s. to 4s. 7d. per 1000 cubic feet.

The Water Committee of the Aberdeen Town Council, under a remit to them to consider the question of the augmentation of the city water supply, have recommended that Mr. Charles Hawksley be appointed to report as to the best source from which to obtain a new and additional supply, and the probable cost.

We have come upon a spell of exceedingly dry weather. The sunny skies day after day, which we have been experiencing for a fortnight

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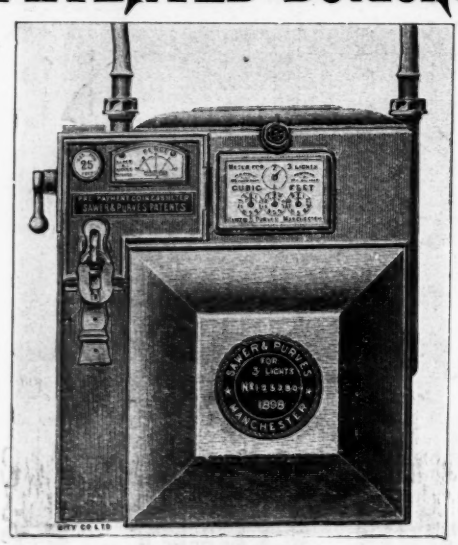
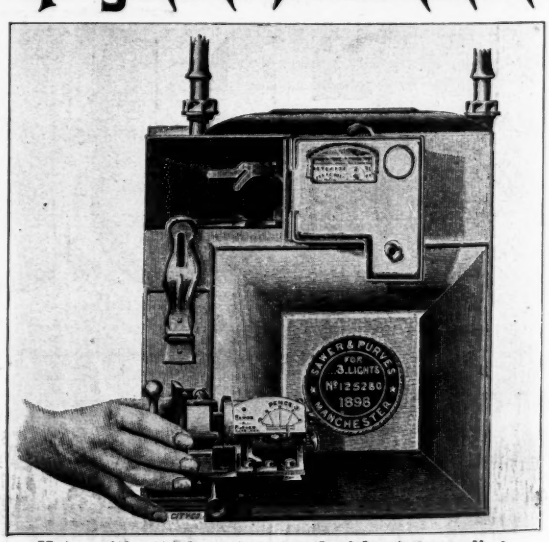


Meter in working position.



Meter with attachment removed without uncoupling.

now, are very pleasant for all whose occupations or recreations take them into the open air. But there are persons to whom the experience of dry weather, or its prospect, is a source of anxiety. These are the bodies who are charged with the duty of providing water supplies. There is as yet no cause for anxiety, nor will there be this year, except in places where the water supply is deplorably deficient; the past winter having been more than usually wet. But one dry season is very often followed by another; and few places can go through two such years without being affected in their water supply. Should this weather continue, therefore, we shall presently have warnings issued against the waste of water. I observe, from the fortnightly return of the Edinburgh and District Water Trust, that the quantity of water they have in store at present is 105 million gallons less than at the same date last year. This shows the extraordinary drain which is being made upon the service, and bears out the necessity for early action in the matter of impressing upon communities the necessity for caution in the use of water.

CURRENT SALES OF GAS PRODUCTS.

LONDON, *May* 25.

Tar Products.—Benzol remains in a very unsettled position; and though prices are moderately steady, the demand is purely for forward delivery. There is a strong inquiry for July-December, but as to May-June consumers appear quite indifferent. Carbolic acid is steady. A large business is reported in crystals for September-December; and this should have a good effect on the market for crude. Tar oils are in fair demand. There is a report that one of the largest railway companies have purchased a very large quantity for delivery up to the end of the year. Solvent continues very dull. It is difficult to understand why there is so little demand for home consumption. Pitch, as usual at this time of year, is perfectly lifeless. Shipments are finished for the season; and it is rather early to fix values for October-December. As regards anthracene, the reported liquidation of the Tar Products Sales Committee will probably have a disastrous effect on "B" qualities, as they are believed to hold a large quantity, and the article is now quite unsaleable.

The average values obtaining during the week are: Tar, 14s. 6d. to 17s. 6d. Pitch, east coast, 29s.; west coast, 27s. Benzol, 90's, 8½d. to 10½d.; 50's, 8d. to 9d. Toluol, 11d. Crude naphtha, 4d. Solvent naphtha, 1s. Heavy naphtha, 11½d. to 1s. 1d. Creosote, 1¼d. Heavy oils, 2¼d. Carbolic acid, 60's, 2s. 5d. Naphthalene, 75s.; salts, 45s. Anthracene, "A," 2½d.

Sulphate of Ammonia.—The market continues fairly steady, but is scarcely so firm, probably owing to the holidays. There is still a strong demand for shipment from London and Liverpool; but as regards Leith and Hull there has not been so much inquiry. Business is reported at £10 11s. 3d. to £10 12s. 6d. Hull, while at Leith makers ask £10 17s. 6d. As regards Beckton, the official price is still £11 in any position.

COAL TRADE REPORTS.

From Our Own Correspondents.

Lancashire Coal Trade.—The month closes with a very general easing down in prices; and there is a prevalent expectation that some definite reduction will come into operation immediately after the holidays. At many of the pits, stocks have been accumulating; and notwithstanding the Whitsuntide stoppages, which are extending over more than a week in the neighbourhood of Manchester, and at least three or four days in other districts, pits in many cases have previously had to go on short time, and there is now a movement in progress for restricting if possible the working during the summer to four days per week. The demand upon the better qualities of round coal is falling off a good deal, and supplies are becoming largely in excess of requirements; while there is a good deal of surplus stock being pushed in from other districts. Pit prices are nominally about 16s. up to 17s. per ton for best Wigan Arley, 14s. to 15s. for Pemberton four-feet and seconds Arley, and 12s. to 13s. for the commoner qualities of house coal. Steam and forge descriptions are hanging generally upon the market; and with keen competition from Derbyshire, Yorkshire, and Staffordshire, local collieries have had to give way substantially upon their list rates in markets where outside supplies are coming in most freely. The consequence is that prices are irregular, and can scarcely be quoted higher than about 10s. 6d. up to 11s. 6d. per ton at the pit for ordinary steam and forge qualities. One or two of the larger gas coal contracts are at present under consideration; but nothing definite has so far transpired as to the prices at which they are likely to be settled. The general impression is that the basis will be about 10s. 6d. to 11s. per ton at the pit for good screened gas coals. With regard to the locomotive fuel contracts, further negotiations have been going on since the colliery owners decided to bring their basis price down to 9s. 6d. per ton at the pit. This figure, however, does not meet the views of the railway companies, who, it is reported, are offering 9s. as the minimum price they are prepared to pay; and it seems tolerably certain this will have to be the basis upon which contracts are concluded. Engine classes of fuel are becoming more of a drug on the market, especially inferior descriptions; and all sorts of prices are ruling where competition is keen from other districts. For common Lancashire slack, prices scarcely average more than 6s. 6d. to 7s. per ton, with better qualities not quoted at more than about 8s. to 8s. 6d.; while slack from other districts can be bought readily at as low as 4s. and 5s. per ton at the pit. Shipping is quiet, with prices lower; 11s. 6d. to 11s. 9d. per ton being average figures for ordinary steam coals, delivered at the Mersey ports. Coke is maintaining the slight improvement recently reported; good foundry qualities moving off fairly well, with prices steadier at about 23s. to 25s. per ton, according to quality. Good washed Lancashire furnace cokes met with an increased demand, and are firm at about 12s. 6d. to 13s. per ton at the ovens.

Northern Coal Trade.—The effect of the holiday is witnessed in the coal trade of the north; there having been a much stronger demand in

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anticipation, with firmer prices, both for steam and gas coals. In the case of best Northumbrian steam coals, prices are stronger at 13s. per ton f.o.b.; and there is some scarcity—the export demand having been very heavy. Less small steam coal is now being shipped; but the output is fairly taken up, though there is comparatively little coal of this class being sold forward—the price being about 6s. per ton f.o.b. Household coals are less in demand. Manufacturing and coking coal is fairly steady for the season; and prices are unchanged. Durham coals generally are well taken up for the next week or so. In the gas coal trade, there is a moderate inquiry for local consumption; but the exports are rather heavier than usual, as some of the exporters who have contracts running are naturally very desirous to get their quantities sent away as fully as possible while the rebate from the duty endures. The price of best Durham gas coals is thus firm for prompt delivery at about 10s. per ton f.o.b., though some large local contracts now in negotiation are expected to be about 1s. per ton lower. Coke is fairly steady at 17s. 6d. to 18s. per ton f.o.b.; blast-furnace coke being 15s. per ton at the Teesside furnaces. Gas coke is now in limited production; but there seems only a weak demand for export. Prices still vary considerably; but the average is about the same as that last quoted.

Scotch Coal Trade.—The trade has fallen into its summer state, and at the present moment is rather featureless. Several gas coal contracts are being negotiated; and in connection with these, it is found that prices are not quite so low as they were about six weeks ago. This is believed to be due to the fact that there is a probability of a compromise before the Conciliation Board upon the question of miners' wages, which is taken to mean that they will not come so low as was at one time expected. The Board will not meet for about a fortnight yet. The prices quoted are: Main 9s. to 9s. 3d. per ton f.o.b. Glasgow, ell 10s. 9d. to 11s. 9d., and splint 10s. 6d. to 10s. 9d. The shipments for the week amounted to 216,585 tons—an increase of 3031 tons upon the previous week, but a decrease of 13,476 tons upon the corresponding week of last year. For the year to date, the total shipments have been 3,837,580 tons—a decrease of 560,943 tons upon the same period of the previous year.

Increase in the Price of Gas at Salford.—In accordance with the recommendation of the Gas Committee, Alderman Phillips moved, at last Wednesday's meeting of the Salford Town Council, that the price of gas be increased 4d. per 1000 cubic feet; making the charge to all consumers from June 24 2s. 10d. He explained that the necessity for the increase arose from the enhanced price that had to be paid for coal, and pointed out that small consumers were allowed a discount of 2d. per 1000 feet if they paid their accounts within a month, and that large consumers of more than 250,000 feet would be charged 2s. 9d. It was at first expected that an increase of 2d. would be sufficient; but it was found that it would not cover by a long way the additional cost of coal. He trusted it would not be necessary to long maintain the proposed high charge. After a brief discussion the motion was adopted.

Sale of Shares.—At the Bell Hotel, Bromley, Kent, last Thursday, Messrs. Baxter, Payne, and Lepper offered for sale, by order of the Directors, 385 ordinary 7 per cent. £10 shares in the Bromley Gas Consumers' Company, which realized in the aggregate £7106 5s., being an average of nearly £18 10s. each.

Malta and Mediterranean Gas Company, Limited.—In the report which the Directors of this Company will present to the shareholders at their meeting on the 11th prox., they state that the operations in the year ending the 31st of March were seriously affected by the cost of coal, involving an increased expenditure under that head of £5727. This has been partly met by an advance in the price of gas and a larger return from residuals. The balance of the general revenue account is £2597; and the Directors recommend the payment of the usual dividends on the first and second preference capital, and a further dividend of 2 per cent. on the ordinary capital, making, with the interim dividend paid in December, 4 per cent. for the year. To effect this, the Directors have had to have recourse to the reserve fund to the extent of £1000.

North Warwickshire Water Company.—The annual meeting of this Company was held at Coventry last Wednesday. Mr. R. Barnes presided. The Directors in their report stated that satisfactory progress had been made with the development of the undertaking. The permanent plant and pumping-station at Corley were in full working order; and the area of supply had been considerably extended by the Company's Act, which received the Royal Assent on July 10 last, whereby additional capital was authorized. An issue recently made was fully subscribed. The Company had now 1281 customers, and were receiving continuous applications for additional supplies. The Chairman pointed out that the increase in supply was 53 per cent. over the year 1900. The report was adopted. The issue of £16,000 debentures was sanctioned, making, with £9000 already issued, a total of £25,000.

The Loan for the Glastonbury Gas-Works Purchase.—A special meeting of the Glastonbury Town Council was held last Tuesday for the purpose of receiving tenders for loans amounting to £32,440, in connection with the purchase of the gas-works. The Mayor (Mr. S. J. Hulbert) explained that the loan of £32,440 was divided under three heads—the first being for £30,000, which was required for the purchase of the undertaking; the second was for a loan of £1000 for the extension and improvement of the concern, and for working capital; and the third was for £1440 for paying the costs and expenses of the Act. The borrowing in each case was sanctioned by the Corporation Gas Act of 1900. Mr. Merrick asked if £32,440 was the whole price of the gas undertaking. It was explained that it was entirely an estimate. The Council had power to borrow such sum as might be required for the purchase of the undertaking. The £30,000 included £25,635, the purchase price of the gas-works, £825 already paid to the Company, £536 expenses of arbitration, and a sum set aside for stock in hand. The works were to be taken over on July 1. Four tenders were received; but their terms were not favourably regarded. It was therefore decided to advertise afresh.

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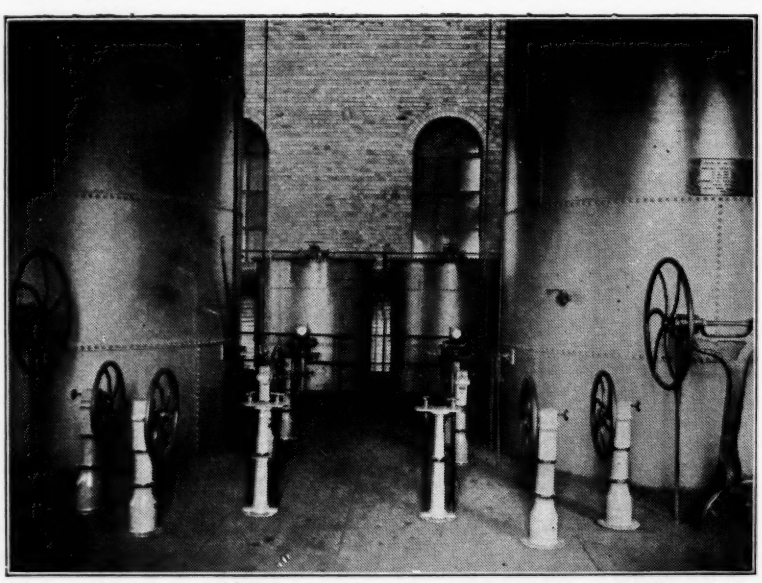

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New Joint-Stock Companies.—The Baldock Gaslight and Coke Company, Limited, has been formed with a capital of £2000, in £10 shares, to take over the business of the Company under the same name which was constituted by Deed of Settlement in 1837 The Lewis Lighting System, Limited, is the title of a Company which has just been registered with a capital of £15,000, in £1 shares, to adopt an agreement with E. Dalton to acquire and turn to account any patents, inventions, licences, concessions, &c., relating to improvements in the production of acetylene gas, and to carry on the business of electricians, engineers, lamp makers, &c.

Leeds Corporation Gas-Works.—It is announced that the annual accounts of the Leeds Corporation Gas-Works will show a substantial profit. After the necessary reductions for interest and for sinking fund, it is estimated that there will be a surplus of about £10,000. Last year the surplus was—14s. 7d.! Under ordinary trading conditions, a balance of £10,000 would have been regarded as good business; but such a result at the end of a period of phenomenally high prices for coal, castings, and other materials, is extremely gratifying. With reference to the question of coal, the foresight of the Committee and management has given Leeds an advantage over several other large cities and towns. At the beginning of the year, they had either bought or had in stock sufficient fuel for five or six months; and consequently they escaped having to purchase a whole twelvemonth's supply at the enhanced rates. In this way some thousands of pounds were saved. A larger profit was also made out of residuals. Another satisfactory feature of the year was the supply of gas to consumers at the same price as was charged in 1899.

London County Council and Shareholders in Public Companies.—At the meeting of the London County Council last Tuesday, the Local Government and Taxation Committee presented a report with reference to the registration of shareholders in public companies, concluding with a recommendation—"That a letter be addressed to the Board of Trade, asking that legislation may be promoted by His Majesty's Government to provide that the list of share and debenture holders in companies supplying gas, electricity, water, or hydraulic power, or owning docks or wharves, or undertaking tramway, telephone, or other public services within the County of London, shall be open to inspection." Dr. Napier said the proposal had little utility to commend it. It would arouse suspicion among the shareholders, without bringing any corresponding benefit to the Council. Mr. John Burns, M.P., supported the recommendation, and said the object of the proposal was to bring the London Companies into line with nearly all others in the matter of registration. The recommendation was adopted with the substitution of the words "suggesting that it is desirable" for the word "asking."

Portsmouth Water Company.—The accounts of the Company for the half year ending March 31, which was presented at the general meeting held last Thursday, showed a balance of £27,051 on the profit and loss account, out of which the Directors recommended the payment of the full statutory dividends. After deduction for void houses, there remained a sum of about £11,136 to be carried forward. In their report, the Directors stated that during the six months 2013 yards of additional street service-mains were laid in new roads; making a total of about 51 miles of trunk mains and 130 miles of service-mains. The number of additional services connected was 392; making the number of premises now under constant service by the Company in all districts 40,708. The quantity of water supplied for domestic use was equal to an average of 30¾ gallons per day per head of the population, exclusive of all supplies by meter. The Chairman (Mr. W. Grant, J.P.), in moving the adoption of the report, congratulated the shareholders upon the splendid financial results achieved by the Company, notwithstanding the relinquishment of upwards of £5000 a year by basing the rents upon the rateable value instead of upon the rent of the premises supplied. Lieut.-Col. Owen seconded the motion, and it was carried unanimously.

Lambeth Water-Works Company.—The report of the Directors for the half year ended March 31 states that during this period 1781 houses and other supplies of water, estimated to yield an annual rental of £4197, were connected with the Company's works, against 1595 houses, &c., producing a rental of £3760, in the corresponding six months of 1899-1900. The revenue account exhibits an increase of £4155 in the water-rents, &c., and of £4086 in the expenditure. The principal increase in the expenditure occurs under the head of pumping and engine charges (£3771), and is almost entirely due to the extra cost of coal. There are decreases under various heads, amounting in all to £1770. The payment to the Chamberlain of the City of London on account of the sinking fund is £1923 more than for the corresponding period, in consequence of the first issue of debenture stock under the Company's Act of 1896 having become chargeable with such payment. The surplus transferred from revenue account to dividend and interest account is £82,767. There is to the credit of the latter account, after payment of interest on debenture stock and in respect of works of intercommunication, an available balance of £82,211. The Directors have decided to transfer £5000 to the contingency fund (which will then amount to £48,000), and recommend that dividends at the prescribed rates of 10 and 7½ per cent. per annum respectively be paid on the £10 and £7 10s. per cent. stock, into which the share capital of the Company was converted and consolidated on April 1, 1901, pursuant to a resolution of the proprietors, together with a payment on both descriptions of stock of 5s. per cent. (being at the rate of ½ per cent. per annum) on account of deficiencies of previous dividends. A balance of £3467 will remain to be carried forward, after making provision for the payment of £2697 to the Chamberlain of the City of London under the sinking-fund clause of the Company's Act of 1886, in respect of debenture stock issued under that Act.

A very successful exhibition has just been held by the Richmond Gas Stove and Meter Company, Limited, in the Town Hall, Clacton-on-Sea, under the auspices of the Urban District Council. The Chairman of the Council (Mr. J. W. Martin, J.P.) opened it, and spoke at some length on the advantages and economy of cooking by gas. He afterwards cooked a bachelor's breakfast, consisting of bacon, eggs, toast, and tea, in ten minutes on one burner, to the delight and amusement of the crowded audience. Miss Mary Laverock delivered lectures each day, with very satisfactory results.

An exhibition of gas lighting, heating, and cooking appliances was opened in the Assembly Room, Malton, last Tuesday, by Mr. R. Metcalfe. He stated that, when the Malton Gas Company started, in 1836, the price of gas was 13s. per 1000 cubic feet; and it was now 3s. In 1876 the consumption was short of 16 million feet, and it now reached 45½ millions. In connection with the exhibition, cookery demonstrations were given by Miss Holroyd. Mr. J. Glover, the Chairman of the Melton Gas Company, opened an exhibition of the gas appliances of Messrs. Richmond and Co., Limited, yesterday week. Cookery lectures were given during the week by Miss Gurney.

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GAS PURIFICATION AND CHEMICAL COMPANY, LIMITED.

OXIDE OF IRON.

O'NEILL'S Oxide has a larger annual sale than all other Oxides combined. Purity and uniformity of quality guaranteed.

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Resists 4500° Fahr. Best for use in GAS-WORKS.

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Old Broad Street,
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HYDRATED OXIDE OF IRON.
PREPARED from Pure Iron.
Twice as Rich as Bog Ore.
Gives no Back Pressure.
The Cheapest in the Market.
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HIGH-CLASS CYCLES at Reasonable and LOW PRICES. Guaranteed and sent on approval. For Cash or Gradual Payments. Catalogue post free. Old Machines Exchanged or Repaired.
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OXIDE OF IRON OF FINEST QUALITY.
BALE'S Special Fire Cement should be used to keep Retorts, Furnaces, &c., in good repair during the heavy Winter Work.
Send for full Particulars to
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Telephone "277 HOLBORN."

PENNY-IN-THE-SLOT WORK.
H. GREENE & SONS, Ltd., are prepared to give QUOTATIONS to Gas Companies or Corporations for FITTING UP COMPLETE and CARRYING OUT the WORK in its entirety, either in Iron or Compo.
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Telegrams: "LUMINOSITY."

GAS TAR wanted.
BROTHERTON AND CO., Tar Distillers.
Works: BIRMINGHAM, LEEDS, and WAKEFIELD.

SADLER & CO., Ltd., Middlesbrough, Tar Distillers and Tar Colour Manufacturers. BENZOL specially prepared for Gas Enrichment free from Sulphur. Pure Hydrated OXIDE OF IRON for Purifying Gas either for Sale or Lent on Hire. Always Buyers of GAS TAR and AMMONIACAL LIQUOR.

AMMONIACAL LIQUOR wanted.
BROTHERTON AND CO., Ammonia Distillers.
Works: BIRMINGHAM, LEEDS, and WAKEFIELD.

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GEORGE NUTTALL & CO., 32, Havelock Road, Saltley, Birmingham.
Regenerator or other Furnaces erected to Engineers' own Designs. Best Work Guaranteed. Please write for Estimates.

NEW GAS PLANT CEMENT.

JOHN E. WILLIAMS AND CO.,
VICTORIA PAINT WORKS,
MANCHESTER.
For all Joints in connection with Oil Gas Plant and Sulphate Plant.
For all Gas Joints.
For all Tar Joints.
For all Ammonia Joints.

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SATURATORS and LEAD WORK for Sulphate of Ammonia Plants.
For REPAIRS or ALTERATIONS, ring up "0848 BOLTON," or Telegraph "SATURATORS, BOLTON."
Largest Practice and most Up-to-Date Works in Britain.
JOSEPH TAYLOR AND CO., Central Plumbing Works, Victoria Square, BOLTON.

MECHANIC and Blacksmith wanted, willing to make himself generally useful on the Works. Applicants must have had experience in an Engineer's Workshop.
State previous Employment, Age, Wages required, and enclosing *copies* of Testimonials, to A. E. LAYTON, Manager, Gas-Works, REDDITCH.

PORTSEA ISLAND GASLIGHT COMPANY, FLATHOUSE WORKS.

WANTED, a Works Superintendent.
Must be thoroughly conversant with the Manufacture of Coal and Carburetted Water Gas and Purification. Also the working of Stoking Machinery, Regenerative Firing, and the control of Workmen. Annual make about 950 million cubic feet. Salary £200 per annum, increasing by £10 per year to £230. House (only). Age between 30 and 40.
Applications, with *copies* of not more than three Testimonials, to be sent to the Chairman of the Company not later than June 1 and endorsed "Works Superintendent."

J. D. ASHWORTH,
Engineer.
Engineer's Office, Gas-Works,
Portsmouth.

HAVERHILL URBAN DISTRICT COUNCIL.

THE Haverhill Urban District Council require immediately a WORKING MANAGER for their Gas-Works.
Annual Production of gas 14 million cubic feet.
Salary £100 per annum, with House, Light, and Coal. Salary may be increased if results are satisfactory.
Applicants must be capable Gas-Fitters, and able to superintend the working of, and do all ordinary repairs to, Shone's Ejectors at the Sewage Farm, as well as the Engines and Compressors for working the same.
A list of duties will be forwarded on application.
Applications (accompanied by not more than Three recent Testimonials), marked "Application for Gas Manager," to be delivered at my Office not later than Tuesday, June 4, 1901.

THOMAS BATES,
Clerk to the Council.
Haverhill, Suffolk,
May 23, 1901.

URBAN DISTRICT OF ASHTON-IN-MAKERFIELD.

APPOINTMENT OF GAS MANAGER.

THE Urban District Council of Ashton-in-Makerfield invite APPLICATIONS for the position of MANAGER of their Gas-Works.
Applicants must be thoroughly competent Men, and have a practical knowledge of the Manufacture of Gas and Residuals, and the erection of Gas-Works Buildings. The present Annual Make of Gas is about 18 Million cubic feet.
The person appointed will be required to devote the whole of his time to the duties of the Office. Commencing Salary £130 per annum.
Applications, stating Age, present or past Employment, accompanied with *copies* of not more than three Testimonials, to be forwarded to me, the undersigned, not later than the 1st of June next, endorsed "Application for Manager."
Canvassing the Members of the Council either directly or indirectly will be deemed a disqualification.

ALBERT SYKES,
Clerk to the Council.
Council Offices, Ashton-in-Makerfield,
May 16, 1901.

URBAN DISTRICT OF ASHTON-IN-MAKERFIELD.

TENDERS FOR COAL AND CANNEL.

THE Ashton-in-Makerfield Urban District Council invite TENDERS for the supply of 2000 Tons of COAL and 250 Tons of CANNEL, from the 1st of July, 1901, to the 30th of June, 1902, to be delivered at such times and in such quantities as required. The Council reserve to themselves the right to make the Contract for half quantity, for Six Months, or continue for the whole period.
Forms of Tender and other Information may be obtained upon application, from the undersigned.
Tenders, endorsed "Gas," to be delivered to me on or before the 1st of June, 1901.
The lowest or any Tender not necessarily accepted.

ALBERT SYKES,
Clerk.
Council Offices, Ashton-in-Makerfield,
May 16, 1901.

STOKER wanted for a Small Gas-Works in South Wales. Used to Shovel Charging. Send Particulars to No. 3697, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, a Gas-Works on Lease or Purchase, by thoroughly practical Gas Engineer. Address No. 3665, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TWO or Three Draughtsmen required who have gone through the Shops. Those having experience in Structural Work in Gas-Works will be given preference.
Apply to the NEW CONVEYOR COMPANY, LIMITED, Smethwick, BIRMINGHAM.

STOKER and Handy Man wanted for Small Country Gas-Works. An Unmarried Man and a Teetotaler preferred.
Apply, stating Age and Wages required, with References, to ALFRED E. ASHLEY, Gas-Works, Neston, CHESHIRE.

COUNTY BOROUGH OF WARRINGTON.
(GAS DEPARTMENT.)

WANTED, a Retort-House Foreman, experienced with West's Manual Machines, Regenerative Furnaces, and the control of Workmen. Wages 45s. per week.
For further Particulars, apply to Mr. W. S. Haddock, Engineer.

FREDK. TAYLOR,
Secretary.
Offices: Mersey Street,
Warrington, May 23, 1901.

FOR SALE, Cheap—One, Two, or Three PURIFIERS, 8 ft. square by 4 feet deep, in good condition, with Valves, Connections, and Lifting Gear.
INQUIRIES for all kinds of SECOND-HAND GAS PLANT will also be esteemed by SAML. WHILE AND SON, 60, Queen Victoria Street, LONDON, E.C.

FAVERSHAM GAS COMPANY.

FOR SALE—A Set of Four 10 ft. square PURIFIERS, with Centre-Valve, 10-inch Connections and Lifting Gear complete, by C. & W. Walker, Limited.
Further Information upon application to the COMPANY'S ENGINEER, Gas-Works, FAVERSHAM.

TO BE SOLD—
SINGLE GASHOLDER, 22 ft. by 10. ft. Four Columns.
Write J. WRIGHT, Bridge House, BLACKFRIARS, E.C.

FOR SALE—One Second-hand Gasholder in good condition, 40 ft. diameter by 14 ft. deep, with Five Cast-Iron Columns and Lattice Girders. This can be offered either erected in Brick Tank to be built to my Drawings, or supplied complete with Steel Tank and fixed ready for work.
For Price and Particulars, apply to

JOHN ANDREWS.
Gas-Works, Langley Mill.

GAS PLANT for Sale—I can always offer NEW and SECOND-HAND GAS APPARATUS, including Retorts and Fittings, Condensers, Exhausters, Scrubbers, Washers, Purifiers, Gasholders, Tanks, Valves, Connections, &c. Also a few COMPLETE WORKS. Compare Prices and Particulars before ordering elsewhere.
J. F. BLAKELEY Gas Engineer, Thornhill, DEWSBURY.

FOR IMMEDIATE SALE.

OWING to the Introduction of Electricity for the Public Lighting, the Sleaford Gas Company, Limited, have FOR SALE, 137 LAMP COLUMNS, BRACKETS, and COPPER LANTERNS. Many of the Lanterns are practically new, fitted with No. 4 Kern Burners, Auto-Taps, and Anti-Vibrators. Also One Large LAMP COLUMN, fitted with Arc Lamp and Three No. 4 Kern Burners, complete.
For Photos, Prices, &c., apply to H. WIMHURST, Engineer and Manager, Gas-Works, SLEAFORD.

SCARBOROUGH GAS COMPANY.

16-INCH FLANGE GAS-VALVES.

THE Directors have for Sale—
Ten 16-inch Internal Screw Double-Faced SLIDE-VALVES (C. & W. Walker, Ltd.).
Two 16-inch Internal Screw SLIDE-VALVES (C. & W. Walker, Ltd.).
These Valves are in good condition, and may be inspected on the Company's Works, Seamer Road, Scarborough.
Further Particulars on application.

J. HOLLIDAY,
Engineer and Secretary.
Company's Office, 32, Westborough,
Scarborough, May 22, 1901.

WOKINGHAM CORPORATION GAS-WORKS.

TENDERS FOR GAS COAL.

THE Gas Committee of the above Works are prepared to receive TENDERS for 1500 tons of GAS COAL (more or less), screened or unscreened, delivered at Wokingham Station, from July 1, 1901, to June 30, 1902.
Tenders to be sent in by the 5th of June next, marked "Tenders for Coal."
The Committee do not bind themselves to accept the lowest or any Tender.

A. G. BATES,
Manager and Secretary.
Gas Offices: Wokingham,
May 22, 1901.

CITY OF CARLISLE.

THE Carlisle Gas Committee are prepared to receive TENDERS for the supply of COAL and CANNEL required at their Works during One Year from the 1st of July next.
Tenders, endorsed "Coal," to be delivered not later than June 1, 1901.
Forms of Tender and other Particulars on application.

C. B. NEWTON,
Engineer and General Manager.
Gas-Works, Carlisle,
May 17, 1901.

CITY OF CARLISLE.

THE Carlisle Gas Committee are prepared to receive TENDERS for the purchase of the surplus TAR produced at their Works for a period of One Year from the 1st of July next.
Tenders, endorsed "Tar," to be delivered not later than June 1, 1901.
Further Particulars can be obtained on application.

C. B. NEWTON,
Engineer and General Manager.
Gas-Works, Carlisle,
May 17, 1901.

PETERBOROUGH GAS COMPANY.

TENDERS FOR COAL.

THE Directors of the above Company invite TENDERS for the supply of best screened GAS COAL and CANNEL for One Year, commencing the 1st of July next.
Form of Tender and Conditions may be obtained on application to the undersigned.
Tenders to be sent in by the 8th of June next, endorsed "Coal," and addressed to the Chairman of the Company.
The Directors do not bind themselves to accept the lowest or any Tender.

JOHN BARTON,
Secretary and Manager.
Gas-Works, Peterborough,
May 14, 1901.

TENDERS FOR GAS COAL.

THE Directors of the Watford Gas and Coke Company invite TENDERS for the supply during the Twelve Months from the 1st day of July, 1901, to the 30th day of June, 1902, of 9000 Tons (more or less) of GAS COAL, screened or unscreened, to be delivered at the Bushey Station of the London and North-Western Railway.
Forms of Tender and all Information may be obtained, on application in writing only, of me the undersigned.
Tenders to be delivered on or before the 10th day of June, 1901, addressed to the Chairman of the Watford Gas and Coke Company, Watford, endorsed "Tender for Gas Coal."
Tenders must be on the Form supplied, any alteration of which will invalidate the Tender.
The Directors do not bind themselves to accept any Tender.

J. DUNCAN ROYAL,
Secretary.
Watford Gas and Coke Company's Offices,
Watford, May 10, 1901.

RAMSGATE CORPORATION.
(GAS, WATER, AND ELECTRICITY DEPARTMENT.)

THE Gas, Water, and Electricity Committee invite TENDERS for the supply of best quality, soft caking, and gas-producing screened DURHAM or OTHER COAL in three annual quantities of 21,000, 22,000, and 23,000 Tons, delivered free into Carts on the Quay of Ramsgate Harbour. The first quantity of 21,000 Tons to be delivered in equal monthly quantities between the 1st of July, 1901, and the 30th of June, 1902; the second and third years' supplies also in equal monthly quantities between the 1st of July, 1902, and the 30th of June, 1903, and the 1st of July, 1903, and the 30th of June, 1904. A distinct price to be named for each annual quantity.
Tenders to be sent in not later than Saturday, June 1, addressed to the Chairman of the Gas, Water, and Electricity Committee, Boundary Road, Ramsgate, endorsed "Coals."
The Committee do not bind themselves to accept the lowest or any Tender.
Full Particulars and Form of Tender on application to

WILLIAM A. VALON,
Engineer.

GLOUCESTER GASLIGHT COMPANY.

TENDERS FOR GAS COAL.

THE Directors of the above Company invite TENDERS for the supply of about 33,000 Tons of GAS COAL for One Year from the 1st day of July next, in such monthly quantities as may be required by the Company.
Tenders to state the price delivered at the Midland Railway Sidings, Hempsted, near Gloucester, or the Great Western Railway Wharf, Llanthony, Gloucester; or if sent (as preferred) by Water, the price f.o.b., and also the price delivered at the Gas Company's Wharf on the Gloucester and Berkeley Canal.
Further Particulars and Forms of Tender may be obtained of the undersigned.
Sealed Tenders, endorsed "Tender for Coal," specifying the description and quality of the Coal, to be addressed to the Chairman, Gas Offices, Eastgate Street, Gloucester, and delivered not later than the 4th day of June next.
The Directors reserve to themselves the right to accept the whole or any portion of any quantity offered, and do not bind themselves to accept the lowest or any Tender.

By order,
WILLIAM E. VINSON,
Secretary.
Gas Offices, Gloucester,
May 2, 1901.

SCARBOROUGH GAS COMPANY.

SULPHURIC ACID.

THE Directors invite Tenders for the supply in Tank-Waggons of SULPHURIC ACID to their Works, Seamer Road, Scarborough, during the Twelve Months ending June 30, 1902.

Further Particulars may be obtained on application.

Tenders to be delivered not later than noon on Saturday, June 15, endorsed "Tender for Acid."

J. HOLLIDAY,
Engineer and Secretary.

Company's Office, 32, Westborough,
Scarborough, May 22, 1901.

COUNTY BOROUGH OF OLDHAM.

THE Oldham Corporation Gas-Works Committee are prepared to receive TENDERS for the supply of about 124,000 Tons of COAL and CANNEL required by them during the Year ending the 30th of June, 1902.

Specification and Forms of Tender can be obtained on application to Mr. Arthur Andrew, Gas and Water Offices, Oldham, to whom Tenders are to be sent on or before Tuesday, the 18th of June.

A. NICHOLSON,
Town Clerk.

Oldham, May 24, 1901.

COUNTY BOROUGH OF OLDHAM.

THE Gas-Works Committee invite TENDERS for the TAR and AMMONIACAL LIQUOR to be produced at their different Gas Stations, for a period of One Year, commencing the 1st of July next.

The Yearly make of Tar is about 8000 Tons and of Ammoniacal Liquor about 2,500,000 gallons.

Particulars and Forms of Tender can be obtained on application to Mr. Arthur Andrew, Gas and Water Offices, Oldham, to whom Tenders are to be sent on or before Tuesday, June 18, 1901.

A. NICHOLSON,
Town Clerk.

Oldham, May 20, 1901.

CONGLETON CORPORATION.

TAR AND LIQUOR.

THE Gas Committee are prepared to receive TENDERS for the surplus TAR and AMMONIACAL LIQUOR, to be produced at their Gas-Works for One Year ending the 30th of June, 1902.

Sealed and endorsed Tenders, addressed to the Chairman of the Gas Committee, to be delivered at the Town Clerk's Office, Congleton, not later than Monday, the 17th of June current.

Further Particulars may be obtained from the undersigned,

WM. ORME,
Engineer and Manager.

Gas-Works, Congleton,
May 24, 1901.

COUNTY BOROUGH OF STOCKPORT.
(GAS DEPARTMENT.)

TO TAR DISTILLERS.

THE Gas Committee invite Tenders, based on a Sliding-Scale Rate, for the purchase of the surplus TAR produced at their Works, for a period of One, Two, or more Years.

Particulars as to Quantity and Conditions of Contract may be obtained on application to the Engineer, Mr. S. Meunier, Portwood Gas-Works, Stockport.

Tenders, endorsed "Tar," addressed to the Chairman of the Gas Committee, to be sent in not later than Wednesday, June 12 next ensuing.

The Committee do not bind themselves to accept the lowest or any Tender.

By order,

ROBERT HYDE,
Town Clerk.

Stockport, May 20, 1901.

CORPORATION OF DROITWICH.

TENDERS FOR GAS COAL.

THE Gas Committee of the above Corporation are prepared to receive TENDERS for the supply of 1800 Tons of best screened GAS COAL or NUTS, between July 1, 1901, and June 30, 1902, to be delivered at Droitwich (G.W.Rly.), in such quantities as may be required.

Forms of Tender and any other Particulars may be obtained on application to the Manager, Mr. S. G. Askew.

The Committee reserve the right to accept Tenders for the whole or any portion of the quantity offered, and do not bind themselves to accept the lowest or any Tender.

Sealed Tenders, endorsed "Tender for Gas Coal," to be sent to the undersigned not later than June 8, 1901.

S. J. TOMBS,
Town Clerk.

Town Hall, Droitwich,
May 21, 1901.

SHEFFIELD UNITED GASLIGHT COMPANY.

TO ENGINEERS AND IRONFOUNDERS.

THE Directors of the above Company invite TENDERS for the Supply and Erection at their Neepsend Works of a CANNEL BREAKER and ELEVATOR, with Conveyor, Engine, Hoppers, &c., complete.

Drawings may be seen, and Specification with Form of Tender obtained, on and after Thursday, May 23, from the Engineer, Mr. J. W. Morrison, at the Company's Offices, Commercial Street.

The Directors do not bind themselves to accept the lowest or any Tender.

Sealed Tenders, endorsed "Tender for Cannel Breaker," must be delivered (by post) to the undersigned not later than the first post on Thursday, June 6, 1901.

HANBURY THOMAS,
General Manager and Secretary.

Commercial Street, Sheffield,
May 17, 1901.

TENDERS FOR GAS COKE.

THE following Gas Authorities—Burslem, Longton, Stoke, Newcastle, Fenton—are prepared to sell their SURPLUS COKE. The total quantities will be from 20,000 to 25,000 tons for the Year ending June 30, 1902.

Tenders for the whole or any portion thereof to be sent in, sealed and endorsed "Tenders for Gas Coke," to Alderman J. G. Bakewell, Longton Gas-Works, not later than Twelve o'clock noon, Friday, June 7.

Forms of Tender may be obtained from the Town Clerks of any of the above Authorities.

Neither the highest nor any Tender will necessarily be accepted.

SKIPTON URBAN DISTRICT COUNCIL.

TO COLLIERY PROPRIETORS, COAL MERCHANTS, AND OTHERS.

THE Council invite Tenders for the supply of about 7000 Tons of best screened GAS COAL, to be delivered free at the Railway Station at Skipton, or at the Council's Siding adjoining the Gas-Works on the Leeds and Liverpool Canal, and also delivered at the Pit Mouth between July 1, 1901, and July 1, 1902, in monthly quantities.

No Form of Tender issued.

Further Particulars as to Periods and Quantities of Deliveries, &c., may be obtained from the Manager, Mr. J. H. Woodward, Gas-Works, Skipton; and Tenders, endorsed "Tender for Gas Coal," are to be sent to him on or before Saturday, June 8, 1901.

The lowest or any Tender not necessarily accepted.

RICHARD WILSON,
Clerk to the Council.

May 23, 1901.

SUTTON-IN-ASHFIELD URBAN DISTRICT COUNCIL.
(GAS DEPARTMENT.)

TENDERS FOR GAS COAL, CANNEL, AND LIME.
TENDERS FOR COKE, TAR, AND AMMONIACAL LIQUOR.

COAL.

THE Gas Committee of the above Council are prepared to receive TENDERS for the supply of 500 Tons of CANNEL, and 2000 Tons of well-screened GAS COAL, to be free from Shale and Pyrites, and to be delivered at the Town Stations (Midland or Great Northern Railways), Sutton-in-Ashfield, in such quantities as the Manager shall from time to time direct between July 1, 1901, and Dec. 31, 1901.

LIME.

Also for the supply of about 200 Tons of LIME, to be delivered at either of the above Railway Stations, in such quantities as the Manager shall from time to time direct between July 1, 1901, and June 30, 1902.

The Lime is to be hand-picked, and clear from Refuse and Ashes.

COKE, TAR, AND LIQUOR.

TENDERS are invited for the COKE and surplus TAR and AMMONIACAL LIQUOR produced at their Works from July 1, 1901, to June 30, 1902, to be delivered in Purchaser's Tank-Waggons at the Midland or Great Northern Railway Stations, Sutton-in-Ashfield.

Tenders for Coal to state Price per Ton of 20 cwt. at the Works or above Railway Stations.

No Tender Forms provided.

The Committee do not bind themselves to accept the lowest or any Tender.

Tenders, endorsed, to be addressed as under, so as to arrive not later than the 5th day of June, 1901.

By order,

JOHN D. FIDLER,
Clerk.

Council Offices, Sutton-in-Ashfield,
May 24, 1901.

CORPORATION OF NOTTINGHAM.
(GAS DEPARTMENT.)

TENDERS FOR COALS.

THE Gas Committee are desirous to receive OFFERS for supplies of COALS, COBBLES, or NUTS, for the period terminating June 30, 1902.

The large Coals and the Cobbles or Nuts are to be separately delivered, where and as from time to time directed, by, and at the expense of, the Contractors, upon the Gas-Works Siding Great Northern Railway, in the East Croft at Nottingham, and also on the Gas-Works Sidings, Midland Railway, at Radford and Basford respectively; and at and after the rate of one-eighth part of such total quantity in each calendar month, commencing with the month of July next, till the Corporation shall be satisfied with the amount of accumulated Stock, and afterwards at such rate as shall be from time to time directed, till the agreed quantity shall have been delivered.

The Coals, Cobbles, or Nuts are to be the best of their respective kinds, freshly wrought and WELL SCREENED (Description, Sizes, and Inclination of Screen to be specified), to be as free as possible from Sulphur, Bats, Bind, Refuse, and Dirt, and shall be weighed (20 cwt. to the ton) upon the Corporation Machines, or upon such other Machines as may be mutually agreed upon.

Payments will be made monthly, if and so long as the contract shall be duly fulfilled.

The Corporation do not bind themselves to accept the lowest or any Tender.

Further Information and Forms on which the Tenders must be made, may be obtained on application to me, at the General Manager's Office; and the Tenders (sealed) specifying the description of Coals, the Seam, and the Pits at which they are to be raised, and stating the Prices for deliveries at the several places, and in manner and subject to the conditions aforesaid, must be delivered to SIR SAMUEL GEORGE JOHNSON, KT., Town Clerk, by first post Monday, the 3rd day of June, 1901.

By order,

WILLIAM REGINALD CHESTER,
Engineer and General Manager.

Corporation Gas Offices, George Street,
Nottingham, May 23, 1901.

LEAMINGTON PRIORS GAS COMPANY.

TENDERS FOR GAS COAL.

THE Directors of the Leamington Priors Gas Company are prepared to receive TENDERS for the supply of the GAS COAL required by them during Twelve Months from the 1st of July next.

Particulars and Forms of Quotation may be obtained from the undersigned.

Tenders must be sent in on or before Tuesday, the 18th of June, 1901.

THOMAS BERRIDGE,
Engineer and Secretary.

FARNWORTH AND KEARSLEY GAS COMPANY.

THE Directors of the Farnworth and Kearsley Gas Company are prepared to receive TENDERS for the surplus TAR and AMMONIACAL LIQUOR produced at their Works, together or separately, for One or Two Years.

Sealed Tenders, addressed to the Chairman, J. W. Watkinson, Esq., to be delivered on or before Wednesday, the 5th of June.

Forms of Tender or any further Information required may be obtained from the undersigned.

THOMAS LEA SHEPPARD,
Manager.

STRETFORD GAS COMPANY.

THE Board of Directors invite Tenders for the construction of a BRICK GASHOLDER TANK, 130 feet diameter.

Full Particulars and Copies of Drawings, Specification, and Quantities may be obtained from the Engineer, Mr. H. Kendrick, upon the receipt of Two Guineas, which will be returned if a *bond-fide* Tender is sent in.

Tenders, addressed to the Chairman, endorsed "Gasholder Tank," to be delivered to the Gas-Works, Stretford, Manchester, not later than Twelve noon, on Tuesday, June 11, 1901.

By order,

BENJAMIN HAYNES,
Secretary.

ACCRINGTON DISTRICT GAS AND WATER BOARD.

THIS Board invite Tenders for the surplus TAR and AMMONIACAL LIQUOR which may be produced at the Accrington and Great Harwood Works of the Board, during the Year from the 1st of July next to the 30th of June, 1902. The estimated quantity of Tar is 1800 Tons, and Liquor 5000 Tons.

Sealed Tenders, endorsed "Tar and Liquor," addressed to the Chairman of the Board, must be in my hands on or before Friday, the 7th of June.

Form of Tender may be obtained on application,

By order,

CHARLES HARRISON,
General Manager.

General Offices, Accrington,
May 10, 1901.

BOROUGH OF CLITHEROE.
(GAS DEPARTMENT.)

TENDERS FOR GAS COAL.

THE Gas Committee invite Tenders for the supply of 3000 Tons of screened GAS COAL and 1500 Tons of SLACK, to be delivered during the Year ending May 31, 1902.

Further Particulars and Form of Tender may be obtained from the undersigned.

Sealed Tenders, endorsed "Tender for Gas Coal," addressed to the Chairman of the Gas Committee, to be delivered at my Office, on or before Tuesday, the 4th of June, 1901.

ROBT. BARRETT,
Manager.

Gas-Works, Clitheroe,
May 15, 1901.

BOROUGH OF NEWBURY.
(GAS DEPARTMENT.)

THE Gas Committee of the Newbury Corporation invite TENDERS for the supply of 4000 Tons of best GAS COAL or NUTS, and 200 Tons of good class CANNEL during the period of Twelve Months between July 1 next and the 30th of June, 1902, to be delivered free to Newbury Station on the Great Western Railway, in such Quantities as may be agreed.

Tenders to be endorsed "Tenders for Coal," and addressed to the Chairman of the Gas Committee, Gas-Works, Newbury, and delivered not later than the 5th of June next.

The Committee do not bind themselves to accept the lowest or any Tender.

WM. R. DAVEY,
Manager.

Gas-Works, Newbury,
May 24, 1901.

PAIGNTON GAS COMPANY.

TENDERS FOR GAS COAL.

THE Directors of the Paignton Gas Company are prepared to receive TENDERS for the supply of about 3000 Tons (or such other quantity as may be agreed on) of best approved GAS COALS, to be delivered in such monthly quantities as may be required by the Company.

Tenders to state the Price of the Coal, delivered at Paignton Station, Great Western Railway, free of all charges.

The Directors do not bind themselves to accept the lowest or any Tender.

Further Particulars may be obtained on application to Mr. C. G. Dawson, the Company's Manager.

Sealed Tenders, endorsed "Tender for Coal," specifying the description and quality of Coal, to be sent on or before the 8th of June, addressed to the undersigned, Gas Offices, 5, Victoria Street, Paignton.

F. W. PUDDICOMBE,
Secretary.

Paignton, May 23, 1901.

PIRACY OF DESIGNS

The following is a copy of Circular sent by the Dorrator Iron Company, Ltd., to their Customers:—

30*th April*, 1901.

We beg to advise you that we can no longer execute any orders for Nos. **155** and **160** mantelpieces (which we have recently manufactured under an error), having undertaken not to supply either of these, nor to manufacture any goods from the original designs of Messrs. **FLETCHER, RUSSELL, & CO., LTD.**, of which the above-named form a part.

Messrs. **FLETCHER, RUSSELL, & CO., Ltd.**, notified us that they were about to institute legal proceedings against us for infringement under the Registration of Designs Acts, submitting proof of our mistake.

We have unreservedly apologized, &c., to them, and thanked them for withdrawal of legal proceedings, and cordially recommend you to apply to them for such mantels.

STOCKTON-ON-TEES CORPORATION.

TENDERS FOR GAS COAL.

THE Gas and Electricity Committee of the above Corporation invite TENDERS for the supply, in whole or in part, of 30,000 Tons of GAS COAL, for delivery in weekly quantities as may be required by the Gas Manager.

Tenders, sealed and endorsed "Tenders for Gas Coal," to be sent in not later than noon of the 22nd day of June, 1901, addressed to the undersigned, at the Gas-Works.

The Gas and Electricity Committee do not bind themselves to accept the lowest or any Tender.

WM. FORD,
Manager.

TO COLLIERY PROPRIETORS AND OTHERS.

THE Leek Urban District Council invite TENDERS for the supply of Best Screened GAS COAL, Washed NUTS, and CANNEL for Six or Twelve Months from the 1st of July, 1901, to be delivered at the Leek Station on the North Staffordshire Railway.

Further Particulars and Forms of Tender may be obtained from the undersigned.

Sealed and endorsed Tenders, addressed to the Chairman of the Gas Committee, to be delivered at the Town Hall, Leek, not later than Saturday, the 1st of June, 1901.

By order,
C. HENSHAW,
Clerk of the Council.

Town Hall, Leek,
May 18, 1901.

TO TAR DISTILLERS AND OTHERS.

THE Leek Urban District Council invite TENDERS for the purchase of the Surplus TAR produced at their Gas-Works for One, Two, or Three Years from the 1st of July, 1901, at per ton of 2240 lbs.

Also for the AMMONIACAL LIQUOR produced at such Works for like periods, but the Council do not bind themselves to sell this product.

Further Particulars may be obtained from the undersigned.

Sealed and endorsed Tenders, addressed to the Chairman of the Gas Committee to be delivered at the Town Hall, Leek, not later than Saturday, the 1st of June, 1901.

By order,
C. HENSHAW,
Clerk to the Council.

Town Hall, Leek,
May 18, 1901.

RHYL URBAN DISTRICT COUNCIL.

(GAS DEPARTMENT.)

TENDERS FOR COAL.

THE Gas Committee of the Rhyl Urban District Council invite TENDERS for the supply of about 5000 Tons of best screened GAS COAL, to be delivered f.o.r. at the Rhyl Station of the London and North-Western Railway in such quantities and at such periods as may be ordered from time to time, between the 1st of July next and the 30th of June, 1902.

Forms of Tender and any other Information may be obtained from the Gas Engineer, Mr. Leonard G. Hall.

Tenders, endorsed "Tender for Coal," and addressed to the Chairman of the Gas Committee, to be delivered on or before the 5th of June, 1901.

The Council do not bind themselves to accept the lowest or any Tender.

ARTHUR ROWLANDS,
Clerk to the Council.

The Council Offices, Rhyl,
May 22, 1901.

BOROUGH OF ROTHERHAM.

(GAS DEPARTMENT.)

THE Gas-Works Committee are prepared to receive TENDERS for the Construction of a BRICK TANK, 154 ft. in diameter by 35 ft. deep.

Plans, Specifications, and further Particulars may be obtained upon application to the Engineer, Gas Offices, Rotherham, upon depositing a fee of Two Guineas, which will be returned upon receipt of a *bonâ-fide* Tender.

The Contractor must not pay less than the Standard Rate of Wages paid in the district, and must observe the proper Conditions of Labour, and no Sub-Contracting will be allowed except by permission of the Corporation.

Tenders to be delivered to the undersigned on or before June 18, endorsed "Tender for Gas-Tank."

By order,
H. HAMPTON COPNALL,
Town Clerk.

Town Hall, Rotherham,
May 24, 1901.

CORPORATION OF ROTHERHAM.

(GAS DEPARTMENT.)

THE Gas Committee of the Rotherham Corporation are prepared to receive TENDERS for the Supply, Delivery, and Erection of a TWO-LIFT GUIDE-FRAMED GASHOLDER.

The Committee also require an alternative TENDER for a COLUMNLESS SPIRALLY-GUIDED HOLDER with Patent Improved Spiral Plates.

The Contractors must not pay less than the Standard Rate of Wages paid in the District, and must observe the proper Conditions of Labour; and no Sub-Contracting will be allowed except by permission of the Corporation.

Plans and Specifications may be obtained upon application to the Engineer, Gas Offices, Rotherham, on payment of Two Guineas, which will be returned on receipt of a *bonâ-fide* Tender.

Tenders, endorsed "Gasholder," to be delivered to the undersigned on or before June 18, 1901.

The Corporation do not bind themselves to accept the lowest or any Tender.

H. HAMPTON COPNALL,
Town Clerk.

Town Hall, Rotherham,
May 24, 1901.

THE Directors of the Kildwick Parish Gas Company invite TENDERS for the supply of the whole or part of 4500 Tons of GAS COAL or NUTS, to be delivered free in the Company's Siding at Kildwick during the Twelve Months ending June 30, 1902.

Tenders to be sent in not later than June 1, 1901, to

FRED. H. PICKLES,
Manager and Secretary.

Gas-Works, Kildwick,
May 17, 1901.

CANNOCK, HEDNESFORD, AND DISTRICT GAS COMPANY, LIMITED.

TENDERS FOR COAL.

THE Directors of the above Company are prepared to receive TENDERS for the supply of about 3000 Tons of best Screened GAS COAL during the ensuing Year.

Further Information and Forms of Tender may be obtained on application to the undersigned.

Sealed Tenders, endorsed "Tender for Coal," and addressed to the Chairman, to be sent in not later than Monday, June 10, 1901.

The Directors do not bind themselves to accept the lowest or any Tender.

T. A. NICHOLLS,
Secretary.

Gas-Works, Cannock.

TENDERS FOR GAS COAL.

THE Magistracy of Copenhagen are prepared to receive TENDERS for the supply and delivery of 90,000 Tons of best GAS COAL from medio June, 1901, until the end of December, 1901.

The Magistracy reserve the right to divide the Contracts between two or more Contractors.

Further Information and Conditions for the delivery may be obtained on application to Kobenhavns Belysningsvæsen, Vestre Boulevard, Kobenhavn B.

The Tenders, sealed and marked "Tilbud paa Kul," to be sent to Magistratens, 4de Afdeling, Lavendelstrœde 1, Kobenhavn K, before the 29th of May, 1901, Twelve o'clock, at which time the Tenders will be opened in the presence of the parties tendering who are in attendance.

THE MAGISTRACY OF COPENHAGEN.

May 10, 1901.

TUNBRIDGE WELLS GAS COMPANY.

TENDERS FOR COAL.

THE Directors of the Tunbridge Wells Gas Company are prepared to receive TENDERS for the Supply of 16,000 Tons of good, clean, unscreened GAS COAL, to be delivered free into the Gas Company's Siding on the South Eastern and Chatham Railway, at Tunbridge Wells, in accordance with the Terms and Conditions which may be obtained on application.

The Tenders to be sent to me not later than Six o'clock p.m., on Tuesday, the 11th day of June, marked "Tender for Coal."

The lowest or any Tender will not necessarily be accepted.

By order,
ANDREW DOUGALL,
Engineer and General Manager.

Gas Company's Office:
44, High Street, Tunbridge Wells,
May 20, 1901.

SHREWSBURY GASLIGHT COMPANY.

TENDERS FOR COAL.

THE Directors of the Shrewsbury Gaslight Company, invite TENDERS for the supply of about 16,500 Tons of screened GAS COALS, to be delivered free at the Great Western or London and North-Western Goods Yard, Shrewsbury, during the Year, commencing July 1, 1901, and ending June 30, 1902.

The Directors reserve to themselves the right to divide the quantity into two or more Contracts, and do not bind themselves to accept the lowest or any Tender.

Tenders must be made on Forms (containing further Particulars) which may be obtained on application at the Company's Works, or by post, and must be sent to the undersigned, on or before the 15th day of June, 1901.

By order,
WM. BELTON, Assoc.M.Inst.C.E.,
Engineer, Secretary, and Manager.

Gas-Works, Shrewsbury,
May 7, 1901.

MANSFIELD CORPORATION.

(GAS DEPARTMENT.)

TENDERS FOR GAS COAL AND CANNEL.
TENDERS FOR TAR AND AMMONIACAL LIQUOR.

COAL.

THE Gas Committee are prepared to receive TENDERS for 2000 Tons of CANNEL and 8500 Tons of best screened GAS COAL, delivered at Mansfield Station, for One Year from the 1st of June, 1901, to the 31st of May, 1902.

TAR AND LIQUOR.

TENDERS for surplus TAR and LIQUOR made during the Year, from the 1st of July, 1901, to the 30th of June, 1902. Tenders for Liquor to be made either at a fixed price per Ton or on the Sliding-Scale regulated by the price of Sulphate.

Tenders, endorsed "Coals" or "Tar and Liquor," as the case may be, to be sent to J. Harrop White, Esq., Deputy Town Clerk, Mansfield, on or before the 28th of May, 1901.

Particulars and all other Information from the undersigned.

No special Form of Tender provided.

The Committee do not bind themselves to accept the lowest or any Tender.

ARTHUR GRAHAM,
Engineer and Manager.

Gas-Works, Mansfield,
May 15, 1901.

LITTLEHAMPTON GAS COMPANY, LIMITED.

ISSUE OF 800 NEW £5 SHARES.

SPARKS & SON are favoured with instructions to SELL BY AUCTION, at their Sale Room, No. 25, High Street, Littlehampton, on Wednesday, the 12th day of June, 1901, at 3.30 p.m. precisely,

800 £5 SHARES

in the above Company (paying 7 per cent.) in Lots of Four Shares each.

Full Particulars and Conditions of Sale may be obtained of Mr. W. BELDAM, the Company's Secretary, at LITTLEHAMPTON; or at the Offices of the AUCTIONEERS, at LITTLEHAMPTON or ARUNDEL.

DORCHESTER GAS AND COKE COMPANY, LIMITED.

REGISTERED UNDER THE COMPANIES ACT, 1862.

ISSUE of 400 Additional 6 per cent. per annum PREFERENCE SHARES of £10 each, forming part of the Unissued Capital.

TENDERS will be received up to the 1st of June, 1901.

The following Payments per Share must be made:—

On Application £2
On Allotment £3

and the balance of the Price tendered, on Aug. 31, 1901.

The Shares will be allotted to the highest bidders; but no Tender will be accepted at a lower Price than £14 per Share.

Prospectuses and Forms of Application may be obtained from the Company's Solicitors, Messrs. SYMONDS AND SONS, DORCHESTER; the WILTS AND DORSET BANKING COMPANY, LIMITED (Williams' Office), DORCHESTER, and their Branches in the neighbouring Towns; or the Secretary, Mr. FRANK OSMOND, Gas-Works, DORCHESTER.

KENT WATER-WORKS COMPANY.

SALE BY TENDER OF £60,000 FOUR-AND-A-HALF PER CENT. PERPETUAL DEBENTURE STOCK.

THE Directors invite Tenders for the ISSUE on SALE to the highest bidders of £60,000 FOUR-AND-A-HALF PER CENT. PERPETUAL DEBENTURE STOCK, authorized to be raised under the Kent Water-Works Act, 1888.

The Ordinary Capital of the Company raised is £868,000, which comprises £708,000 Capital Stock, on which the Dividend for the last Half Year was at the rate of 10 per cent. per annum, with a further Dividend of 4 per cent. per annum on account of back Dividends; and £160,000 New Capital Stock, on which the full Dividend of £7 per cent. has been paid since its issue.

The Loan Capital raised is £122,000—viz., £42,000 by Mortgages, and £80,000 by Debenture Stock.

This Stock is an authorized investment for Trustees.

Forms of Tender with Particulars and Conditions may be obtained on application to the Secretary.

Tenders must be sent in on or before Friday, the 14th of June.

By order of the Directors,
A. DICKSON, Jun.,
Secretary of the Company.

Kent Water-Works Offices:
Mill Lane, Deptford, S.E.,
May 15, 1901.

KENT WATER-WORKS COMPANY.

SALE BY TENDER OF THREE PER CENT. DEBENTURE STOCK (INTERCOMMUNICATION).

THE Directors invite Tenders for such amount of THREE PER CENT. DEBENTURE STOCK, or of any portion thereof being a multiple of £10, as may in the whole be sufficient to realize the sum of £11,512, being the Sum expended by the Company in the construction of Intercommunication Works under the provisions of the Metropolis Water Act, 1899.

This Stock may be redeemed at par at the option of the Company at any time after the expiration of 25 Years from the date of issue upon six months' previous notice to the registered holders thereof. It ranks *pari passu* with the other Debenture Stocks of the Company for the payment of Interest.

This Stock is an authorized investment for Trustees.

Forms of Tender with Particulars and Conditions may be obtained on application to the Secretary.

Tenders to be sent in on or before Friday, the 14th of June.

By order of the Directors,
A. DICKSON, Jun.,
Secretary of the Company.

Kent Water-Works Offices:
Mill Lane, Deptford, S.E.,
May 15, 1901.

BY EDWIN FOX AND BOUSFIELD.

AT THE AUCTION MART.

On Wednesday, June 12, at 2 for 3 o'clock, in Lots.

By Order of the Court of Directors, and pursuant to the Auction Clauses of the Company's Act of 1878.

GRAND JUNCTION Water-Works Company £30,000 NEW CAPITAL—in 600 £50 New Seven per Cent. Shares, in such lots as, while enabling the large Capitalist readily to acquire a considerable holding, will admit the smaller Investor to participate in the advantages of an interest in this well-known London Water Company.

The above Shares form part of, and have the same Powers and Privileges as, the existing Ordinary Capital of the Company, and are entitled to a Dividend not exceeding £7 per cent. per annum. The gross rental in 1875 was £121,559, and in 1900 it amounted to £228,190—an increase to nearly cent. per cent. in 25 years.

In Lots of Two Shares each; the buyer of one lot will have the right of taking further lots at a like price per Share without competition.

Particulars of the Secretary of the Company, at the Chief Offices, No. 65, South Molton Street, Oxford Street, W.; at Messrs. Edwin Fox and Bousfield's Office, 99, Gresham Street, Bank, E.C.; and of the Company's Solicitors, Messrs.

BIRCHAM AND CO.,
46, Parliament Street, S.W.

CHIPPING NORTON GAS COMPANY.

TENDERS are invited for the supply and delivery at Chipping Norton Station of 1000 to 1100 Tons of best screened GAS COAL, from July 1, 1901, to June 30, 1902.

Tenders not later than June 4 to

W. Toy,
Secretary.

High Street, Chipping Norton.

PORTLAND URBAN DISTRICT COUNCIL.
(Gas Department.)

TENDERS FOR COAL.

NOTICE is Hereby Given, that the Gas Committee of the above Council, are prepared to receive TENDERS for the supply of COAL required at the Portland Gas-Works, for the Year ending July 1, 1902.

The probable quantity required during that period would be approximately, about 2500 Tons.

General Conditions and Particulars of Contract will be supplied on application to the undersigned, to whom Tenders should be sent not later than June 5, 1901.

Ernest J. Elford,
Engineer to the Council.

Council Offices, New Road,
Portland, May 21, 1901.

SALES BY AUCTION OF GAS AND WATER STOCKS AND SHARES.

MR. ALFRED RICHARDS begs to notify that his AUCTIONS of STOCKS and SHARES in London, Suburban, and Provincial Gas and Water Companies are held PERIODICALLY, at the Mart, Tokenhouse Yard, E.C.

He also undertakes the issuing by AUCTION of GAS and WATER STOCKS and SHARES under Parliamentary Powers.

Terms for issuing such Capital, and also for including Gas and Water Stocks and Shares in these periodical Sales, can be obtained on application at Mr. Alfred Richards' Offices, 18, Finsbury Circus, E.C.

By order of the Directors of the
CHIGWELL, LOUGHTON, AND WOODFORD GAS COMPANY.

400 £10 ORDINARY SHARES.

MR. ALFRED RICHARDS will Sell the ABOVE BY AUCTION, at the Mart, E.C., on Tuesday, the 4th of June, at Two o'clock, in Lots.

Particulars of the Auctioneer, 18, Finsbury Circus, E.C.

By order of the Directors of the
LOWESTOFT WATER AND GAS COMPANY.

NEW ISSUE OF £1900 FOUR PER CENT. PERPETUAL DEBENTURE STOCK, AND 400 £10 ORDINARY SHARES.

MR. ALFRED RICHARDS will Sell the ABOVE BY AUCTION, at the Mart, E.C., on Tuesday, June 4, at Two o'clock, in Lots.

Particulars of the Auctioneer, 18, Finsbury Circus, E.C.

By Order of the Executors of the late John Read, Esq., and other Owners.

STOCKS AND SHARES
IN THE
HASTINGS AND ST. LEONARDS GAS COMPANY.
SEVENOAKS GAS COMPANY.
EAST GRINSTEAD GAS AND WATER COMPANY.
EASTBOURNE GAS COMPANY.

MR. ALFRED RICHARDS will Sell the ABOVE BY AUCTION, at the Mart, E.C., on Tuesday, June 4, at Two o'clock precisely, in Lots.

Particulars of the Auctioneer, 18, Finsbury Circus, E.C.

CHELSEA WATER-WORKS COMPANY.

NOTICE is Hereby Given, that the HALF-YEARLY GENERAL MEETING of the Governor and Company of Chelsea Water-Works will be held at their Office, Commercial Road, Pimlico, in the County of London, on Thursday, the 20th day of June prox., at One o'clock in the Afternoon precisely for the General Business of the Company.

The REGISTER of TRANSFERS WILL BE CLOSED between the 8th day of June prox., and the 20th day of June prox., both days inclusive.

By order,
G. H. Gill, Secretary.

Office: 41, Commercial Road, Pimlico,
May 25, 1901.

MALTA AND MEDITERRANEAN GAS COMPANY, LIMITED.

TO THE SHAREHOLDERS.

NOTICE is Hereby Given, that the ORDINARY GENERAL MEETING of the Shareholders of this Company will be held at the Offices, 60, Gracechurch Street, London, E.C., on Tuesday, the 11th of June, 1901, at Twelve o'clock Noon, for the purpose of receiving the Report of the Directors and the Accounts for the Year ended the 31st of March, 1901, and for the transaction of the General Business of the Company.

One of the Directors, Mr. Stephenson Robert Clarke, retires from office, and offers himself for re-election.

The Auditors, Mr. Robert Hesketh Jones and Mr. Thomas Guyatt, retire, and offer themselves for re-election.

The TRANSFER BOOKS WILL BE CLOSED from the 28th of May until the day of the Meeting, both days inclusive.

By order,
A. W. Cooper,
Secretary.

60, Gracechurch Street, E.C.,
May 21, 1901.

WEYMOUTH CONSUMERS' GAS COMPANY.
(Incorporated by Act of Parliament, 1867.)

AUTHORIZED CAPITAL:
ORDINARY, £114,000; LOAN, £28,500.
CAPITAL PAID UP:
ORDINARY, £74,000; DEBENTURE, £18,500.

SALE BY TENDER OF £10,000 3½ PER CENT. PERPETUAL DEBENTURE STOCK,
For the purpose of paying off a similar amount of Debenture Bonds bearing a higher rate of Interest.
Minimum Price, £98 per Cent.

NOTICE is Hereby Given, that it is the intention of the Directors of this Company to SELL BY TENDER £10,000 of 3½ PER CENT. PERPETUAL DEBENTURE STOCK, to be issued under the provisions of the Company's Acts of 1867, 1875, and 1897.

Particulars and Forms of Tender may be obtained on application to the Undersigned; and Tenders must be sent in so as to be received at the Office of the Company, 71, St. Thomas Street, Weymouth, not later than Ten a.m., on Thursday, June 6, 1901.

The Stock will be allotted to the highest bidders; but no Tender will be accepted at a lower price than £98 for each £100 of Stock.

By order of the Board of Directors,
James Lowe,
Manager and Secretary.

May 20, 1901.

THE INCORPORATED

Gas Institute.

THE THIRTY-EIGHTH

ANNUAL GENERAL MEETING

OF THE MEMBERS
WILL BE HELD ON
TUESDAY (10.30 a.m.),
WEDNESDAY (10 a.m.), and
THURSDAY (10 a.m.),
the 11th, 12th, and 13th of June, 1901,
AT THE
ROYAL UNITED SERVICE INSTITUTION,
WHITEHALL, LONDON.

The Chair will be taken by the President,
T. ORMISTON PATERSON, Esq.,
M.Inst.C.E.

On Friday, June 14, there will be an EXCURSION by Steamer to HERNE BAY.

THE BENEVOLENT FUND.

The Annual General Meeting of the Donors and Subscribers to the Benevolent Fund will be held on Tuesday, June 11, at the close of the sitting, about Two p.m.

WALTER T. DUNN, Secretary.

13, Victoria Street, Westminster, S.W.

Foolscap 4to, pp. 535, with 239 Illustrations and Steel Plate Engraving (as Frontispiece) of William Murdoch, *Inventor of Gas Lighting. Morocco Gilt, 21s.; Roan Gilt, 18s.*

THE SIXTH (AND CENTENARY) EDITION
OF THE

HANDBOOK
FOR
GAS ENGINEERS AND MANAGERS.

BY
THOMAS NEWBIGGING,
M.Inst.C.E.

London:
WALTER KING, 11, BOLT COURT,
FLEET STREET, E.C.

THOMAS DUXBURY & CO.,
16, DEANSGATE, MANCHESTER.
Best Gas Coal and Cannel, giving High Illuminating Power, Large Yield per ton, and reasonable in Price.
Telegrams: "DARWINIAN, MANCHESTER."
Telephone 1806.

COKE-BREAKERS,

PRICES REDUCED.
(THOMAS & SOMERVILLE'S PATENT)
With Elevators and Conveyors worked by Steam or Gas Engine.

GEORGE WALLER & CO.,
165, QUEEN VICTORIA STREET, E.C.;
And at STROUD, GLOUCESTERSHIRE.

UNEQUALLED.

Gas Companies are solicited to try Samples of the

MIRFIELD
BLACK BED GAS COAL.

Prices and Analysis on application.

MIRFIELD (GAS-COAL) COLLIERY COMPY.
RAVENSTHORPE, NEAR DEWSBURY.

NEWBATTLE CANNEL.

Highest Results in Gas, & Excellent Coke.

QUOTATIONS ON APPLICATION TO
THE LOTHIAN COAL COMPANY,
LIMITED,
NEWBATTLE COLLIERIES,
DALKEITH N.B.

HEATHCOTE GAS COAL.

Rich in Illuminating Power and Yield of Gas.
Above the Average in Weight and Quality of Coke.
Maintains a High Standard in Residuals.

THE GRASSMOOR CO., LD.,
CHESTERFIELD.

JAMES OAKES & CO.

ALFRETON IRON-WORKS, DERBYSHIRE,
AND
Wenlock Iron Wharf, 21 & 22, Wharf Road, CITY ROAD, LONDON, N.,
Manufacture and keep in Stock at their Works (also large stock in London)

PIPES and CONNECTIONS, 1¼ to 48 inches in diameter, and make and erect to order RETORTS, PURIFIERS and TANKS, with or without planed joints, COLUMNS, GIRDERS, SPECIAL CASTINGS, &c., required by Gas, Water, Railway, Telegraph, Chemical, Colliery, and other Companies.

Note.—Makers of HORSLEY'S PATENT SYPHONS. These are cast in one piece, without Chaplets; doing away with Bolts, Nuts and Covers, and rendering Leakage impossible.

HYDRAULIC BLOWER

For blowing Air into Gas Purifiers for the purpose of

REVIVIFYING THE FOULED OXIDE.

Full Particulars on application.

LUXWERKE LUDWIGSHAFEN AM RHEIN.

TROTTER, HAINES, & CORBETT, LIMITED,
Brettell's Estate
FIRE-CLAY & BRICK WORKS,
STOURBRIDGE.

Manufacturers of GAS-RETORTS, GLASSHOUSE FURNACE & BLAST-FURNACE BRICKS, LUMPS, TILES, and every description of FIRE-BRICKS.
Special Lumps, Tiles, and Bricks for Regenerative and Furnace Work.
SHIPMENTS PROMPTLY AND CAREFULLY EXECUTED.

LONDON OFFICE: R. CULL, 84, OLD BROAD STREET, E.C.

THOMAS TURTON AND SONS, LIMITED,
SHEAF WORKS, SHEFFIELD,
MANUFACTURERS OF
FILES OF BEST QUALITY FOR ENGINEERS.
STEEL OF ALL DESCRIPTIONS.
SCREW STOCKS, TAPS AND DIES, SPANNERS, RATCHET BRACES, LIFTING JACKS, ANVILS, VICES, AND ENGINEERS' TOOLS GENERALLY.
LONDON OFFICE:
90, CANNON STREET, E.C.

HOLMSIDE GAS COALS.
Present Daily Produce over 5000 Tons.
Latest Analysis—By CHARLES PHILLIPS, Gas Examiner to Rotherham Corporation

Yield of Gas per Ton . . .	11,205 Cubic Feet.
Illuminating Power	16 7/9 Stand. Sperm. Candl.
Coke (of good & pure quality)	13¾ Cwt. per Ton.
Sulphur	A little over 1 per Cent.
Ash	Under 1 per Cent.
Tar	163 lbs. (Avoir.) per Ton.
Ammoniacal Liquor	103 lbs. (Avoir.) per Ton.

HOLMSIDE GAS COALS are supplied to the largest Gas Companies in England and on the European Continent; London alone consuming about half the produce.

SOUTH MOOR PELTON GAS COALS.
Present Daily Produce available 3000 Tons.
Of equal quality to the "Holmside" Coal, and also very largely used by many Gas Companies at Home and Abroad.
Both descriptions are shipped at Tyne Docks, and Dunston Staiths, River Tyne, also at North and South Docks, Sunderland.
These Coals may be bought through the Principal Merchants in England, or direct from
MR. MARK ARCHER,
HOLMSIDE & SOUTH MOOR OFFICES, NEWCASTLE-UPON-TYNE.

NITRATE of Thorium and Cerium. FABRIK CHEMISCHER PRAEPARATE VON STHAMER NOACK, AND CO., HAMBURG.

DISPENSE WITH CANNEL COAL
and
INCREASE YOUR ILLUMINATING POWER
by using the
WHESSOE-MUNICH BENZOL CARBURETTER
The Cheapest and Best in the Market.
The Managers of Tynemouth, Middlesbrough, and Darlington Gas-Works are much pleased with it, and would not be without it.
Apply to the Sole Makers:
THE WHESSOE FOUNDRY COMPANY, LIMITED, DARLINGTON.

ALL PARTS FOR GAS-METERS,
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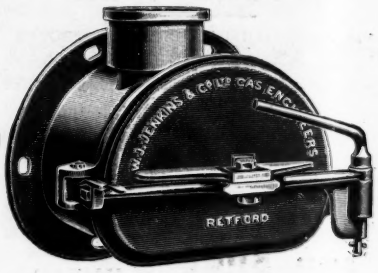

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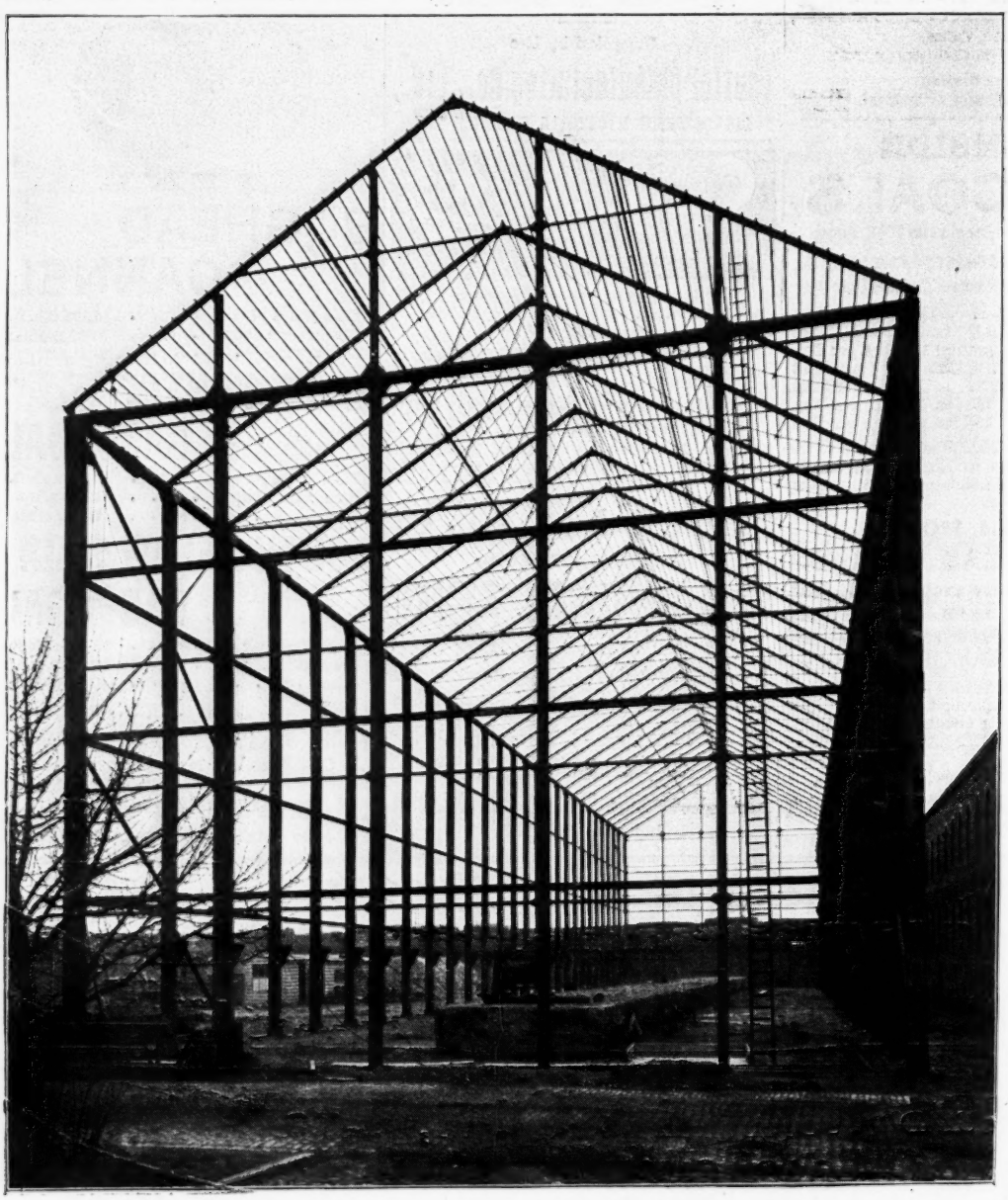

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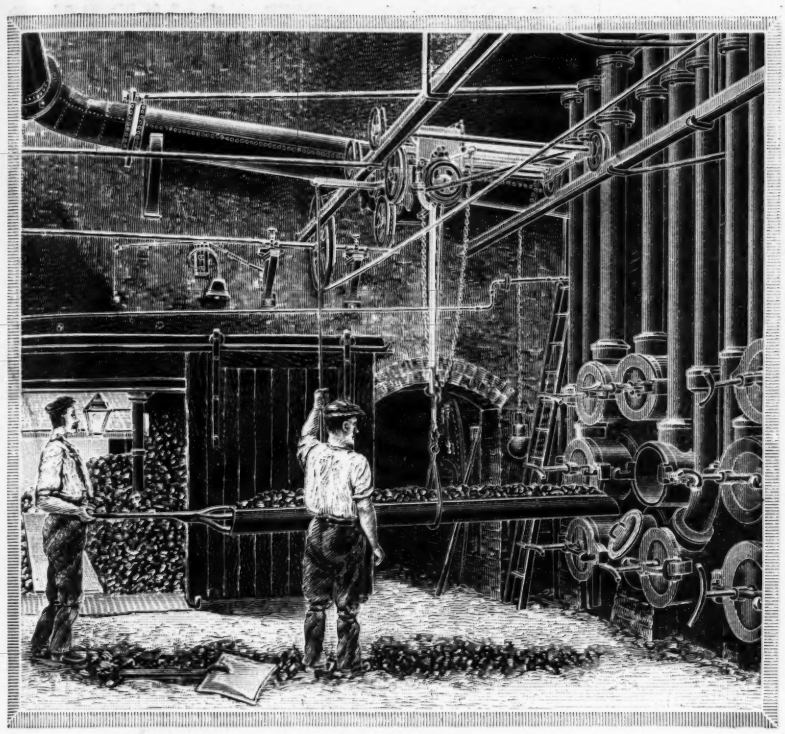

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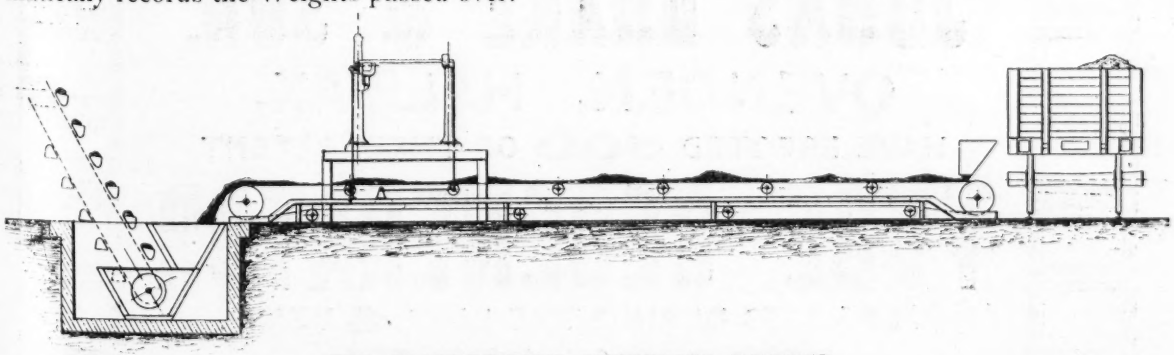

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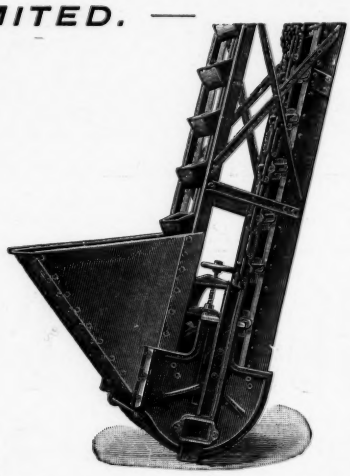

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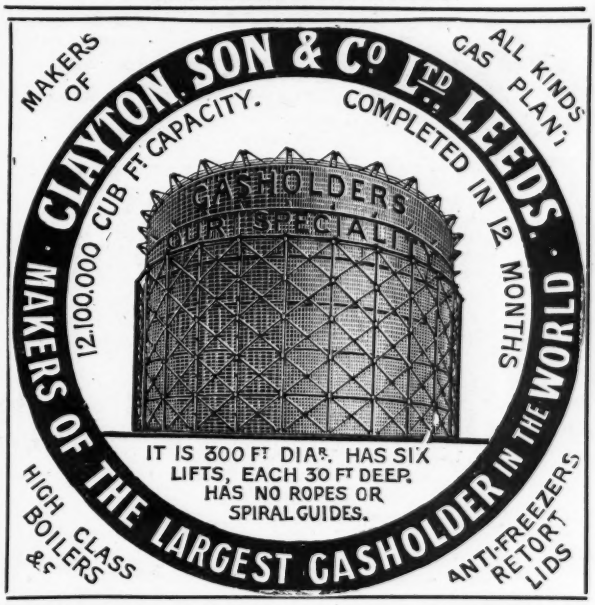
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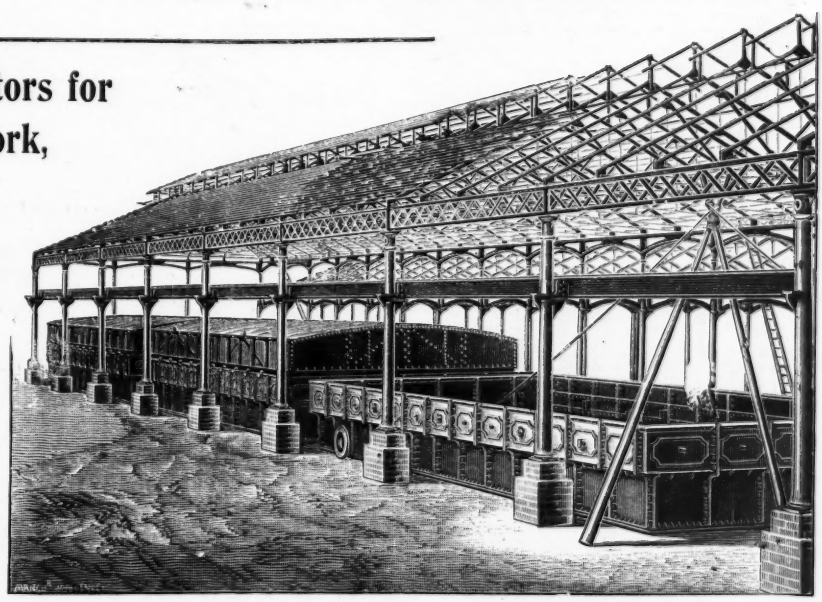

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[See also Advt. p. 1432

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